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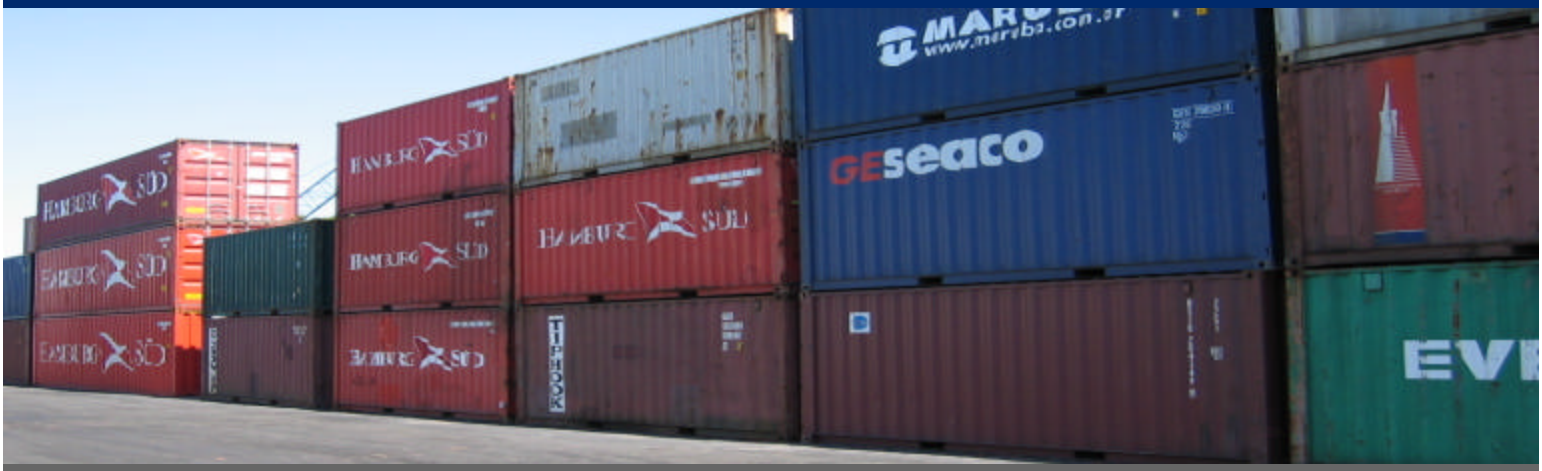
IMPACT OF TRANSPORT AND LOGISTICS ON INTERNATIONAL TRADE COMPETITIVENESS IN PARAGUAY



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IMPACT OF TRANSPORT AND LOGISTICS ON INTERNATIONAL TRADE COMPETITIVENESS IN PARAGUAY

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FOREWORD

Business Forum on Transportation and Logistics: Impact of Transportation and Logistics on Competitiveness in Paraguay

The National Chamber of Commerce and Services of Paraguay (Cámara Nacional de Comercio y Servicios de Paraguay, CNCSP) received the invaluable support of the United States Agency for International Development (USAID), through the consulting firm CARANA Corporation, to organize and carry out activities leading to the drafting of a single document addressing the **"Impact of Transportation and Logistics on Competitiveness in Paraguay."**

It was highly important for Paraguay, firstly, that the document detail the impact and consequences of transportation and logistics and, secondly, that it propose relevant solutions, in view of the country's landlocked status and its lower degree of economic development relative to the rest of the region and the world. This important document highlights the need to reduce import and export distribution costs, which would contribute substantially to raising productivity and competitiveness in our economy. As a side benefit, such an improvement would boost the volume of traffic and thus promote the development of transportation infrastructure as well.

From an institutional standpoint, the CNCSP, which was founded more than 100 years ago, has fulfilled the objective set forth in its mission statement: "… to become a driving force behind economic development in Paraguay by influencing and expediting the processes involved in the trade and services sector, so as to facilitate, promote, and enhance these activities based on a vision of a sustainable developed country."

Lastly, the successful strategic partnering of entities involved in foreign trade, as occurred for the drafting of this document, is a fine example of the CNCSP's continued commitment to devoting its efforts towards improving Paraguay's economy and raising living standards for the population as a whole.

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EXECUTIVE SUMMARY

Paraguay's geographic status as a landlocked country (LLC) is a competitive disadvantage, insofar as it makes the country dependent on land transportation and on river-sea operations in neighboring countries. To a greater extent than in countries with a coastline, the quality of transportation and logistics in Paraguay is a determinant of export competitiveness and of the efficiency of import processes.

The international context, characterized by trade integration and globalization, as well as Paraguay's possible accession to other trade agreements, makes it increasingly imperative that the country improve transportation and logistics and facilitate trade, inasmuch as competitiveness depends increasingly on these factors and less on tariff-related issues. In light of the importance of transportation and logistics in this context, this research project has been conducted with a view to identifying excess costs in international logistics and transportation in Paraguay and proposing ways to minimize the factors causing decreased competitiveness.

Hence, this document specifies, in great detail, all direct and indirect costs (inventory-backlogs and financial costs) for ten export and import corridors.[1] The sequence of transactions in these corridors was analyzed, from product preshipment to arrival at the port of delivery and, in the case of imports, from shipment until arrival at the consignee warehouse. Excess costs in the import and export process for these products and corridors were also identified. Where the data so permitted, excess costs were calculated at the macro level for the Paraguayan economy.

Overriding importance of transportation and logistics in international trade. This independent, quantitative analysis makes it clear that transportation and logistics costs are extremely important factors for Paraguay's international trade competitiveness:

- Transportation and logistics costs represent an average of **19.7%** of the FOB price in the products and corridors studied, while the excess costs identified represent **6.61%** of the FOB price in the products and corridors studied.
- The value of the excess costs identified for the selected products and corridors is US$ 145 million, or **1.88% of gross domestic product (GDP)** in 2005.[2]
- At the macro level, an extrapolation of these calculations shows that the excess costs identified in Paraguay have an impact equivalent to US$ 327 million per year, or **4.26% of GDP**.[1]

This is a very significant burden, hindering the country's development and putting a strain on poverty-reduction efforts. Excess costs directly diminish export competitiveness and lower total payrolls in Paraguay, inasmuch as exporters transfer their income losses to their employees and producers. Moreover, on the import side, the excess costs are transferred to final consumers. In addition, they raise the price of export products,

[1] The items transported in these corridors include soybeans, meat, sesame seeds, wood, agrochemicals, and IT products, in addition to less-than-container-load (LCL) containers.
[2] 2005 GDP, US$ 7.672 billion, Central Bank of Paraguay, 2006

leading to a further loss of competitiveness. In sum, these costs have a strong economic and social impact.

Excess costs identified in the export and import process. The first step was to identify the stage in which these problems arise, and then carry out an overall analysis of some excess costs in the Paraguayan economy. The breakdown of the impact, in monetary and percentage terms, of the excess costs is presented in **Table i.1** below:

TABLE i.1 Breakdown of Identified Excess Costs, 2005

Process	Impact, in US$ millions	%
Preshipment	30.95	21%
Land transportation	38.4	26%
Port	25.94	17%
Customs	22.81	16%
Water transportation	24.85	17%
Collection	4.29	3%
Total	146.24	100%

Source: CARANA Corporation, Analysis, 2006

Preshipment: Consolidation, packing, and storage of goods, transportation to exporter, and other activities.

Land transportation: Domestic overland transportation from the exporter's plant to the port, and any other logistics-related costs arising in this stage of the process.

Port: Cost related to waiting at, conducting operations in, and entering and departing the port.

Customs: Activities related to Customs and other agencies and the customs broker; includes certifications and inspections required by the government and the client.

Water transportation: Cost of shipping to the destination and expenses related to insurance, handling, and port services, in the case of river-sea transport.

Collection: financial expenses related to transactions

As shown in the table, the largest portion (26%, or more than a quarter of the total) of the excess costs arises in the ***land transportation*** stage. These excess costs stem principally from delays at border crossings, the impact of these delays on inventory costs and the timely delivery of goods, and lost profits when trucks are idle. The ***preshipment*** stage accounts for the second largest portion—21%—of excess costs. These excess costs stem principally from poor roads, losses of goods in domestic transport, and expenses caused by delays in obtaining health certifications (mostly with frozen and chilled meat). Thirdly, 17% of excess costs arise during ***water transportation***, due to insufficient dredging and beaconage. Another 17% of excess costs stem from ***port*** expenses, most of which are Customs-related expenses incurred during the port stage. In addition, 16% of total excess costs identified are incurred in the ***Customs*** *process per se* (charges levied not only by the Customs bureau itself but also by the different regulatory agencies). Lastly, the handling of payments and ***collections*** accounts for 3% of excess costs.

Understanding the most important excess costs in the country. In Paraguay, a landlocked, developing country, there is no dearth of opinions on the most significant issues to be addressed to enhance the competitiveness of the economy, of the different sectors, or of business. A principal challenge of this document is, then, to understand, objectively quantify and present these issues and thus contribute to a national debate on competitiveness in the logistics and transport sector and its impact on costs and excess costs in international trade. The ten most significant excess costs identified in this analysis are listed in **Table i.2**.

TABLE i.2 The Ten Most Significant Excess Costs Identified, 2005

10 MOST SIGNIFICANT IDENTIFIED EXCESS COSTS	TOTAL IMPACT US$
Border crossings	$ 38,404,015
Delays in port access	$ 19,556,645
Insufficient river dredging	$ 19,377,896
Delays due to poor roads	$ 16,615,336
Delays in obtaining health certifications	$ 7,232,951
Consular visa requirements	$ 6,801,600
Loss of merchandise in the preshipment process	$ 5,085,551
Delays in payments	$ 4,291,192
Cargo Reservation Law	$ 3,491,037
Customs brokerage fees	$ 3,331,490
SUBTOTAL OF THE 10 MOST IMPORTANT EXCESS COSTS	$ 124,187,713

Source: CARANA Corporation, Analysis, 2006

According to this analysis, the ten excess costs identified above constitute more than 90% of all excess costs. The leading excess cost is related to highly inefficient border crossings, the value of which was conservatively estimated at US$ 38.4 million for 2005. Recent news reports on the closing of the Friendship Bridge between Ciudad del Este and the Brazilian city of Foz do Iguaçu have highlighted these serious problems for the economies of the region. Though the competitiveness of private Paraguayan ports has improved significantly in recent years, systematic delays in accessing ports still lead to excess costs (financial and inventory-related) on the order of US$ 19.6 million per year for exporters. The third most important problem identified, it terms of economic impact, is the lack of dredging and beaconage in the Paraná and Paraguay Rivers. The current conditions of these waterways, i.e., the lack of depth and beaconage, translates into US$ 19.3 million per year in excess costs for exporters and importers.

Other important excess costs stem from consular visa requirements, losses during the preshipment process, delays in collections, the Cargo Reservation Law, and higher customs brokerage fees than those found in neighboring countries. **Table i.3** below identifies the 21 most significant excess costs and provides a summary of our conclusions and short- and long-term recommendations for eliminating them.

TABLE i.3 Primary Excess Costs Identified and Short-Term and Long-Term Recommendations to Eliminate Them			
PRIMARY EXCESS COSTS IDENTIFIED		**RECOMMENDATIONS TO ELIMINATE EXCESS COSTS**	
DESCRIPTION	**ESTIMATED TOTAL IMPACT (US$)**	**SHORT-TERM**	**LONG-TERM**
Border crossings Excess costs related to inventories due to delays at border crossings. Excess costs causing lost profits due to delays at border crossings. Excess costs calculated for trucks and truck drivers due to delays at borders crossings. Excess costs due to delays at borders, translating into higher parking fees and gratuities.	**$38,404,015**	• Carry out more in-depth analyses on delays, informal expenses, unnecessary services, and corrective measures at border crossings, periodically gauging the impact of excess costs. • The private sector has to take a leading role in a determined effort to disseminate information on the economic impact of delays at borders crossings.	• Long-term promotion of corrective measures to solve delays and eliminate excess expenses.
Delays in port access Excess costs (inventory cost and lost profits) due to inordinate delays stemming from poor coordination in port operations and a lack of Customs facilitation.	**$19,556,645**	• Analysis of implementation of cutoff mechanisms, and coordination among user associations, port operators, and vessel operators. • Analysis and implementation of customs-facilitation measures.	• Enhancement of customs-facilitation measures.
Lack of dredging and beaconage in waterways The excess costs stemming from insufficient waterway dredging and beaconage directly impacts warehouse use, artificially increasing shipping costs and discouraging the use of deeper-draft vessels. It also translates into excess inventory costs because of more navigation days than necessary, due principally to insufficient beaconage, which restricts nighttime navigation.	**$19,377,896**	• A more-in-depth analysis of the impact of excess costs arising from insufficient dredging and beaconage. • Analysis of the economic and financial feasibility and of rate, operational, and institutional alternatives to allow for a long-term solution to insufficient depth and beaconage. • The private sector has to take a leading role in a determined effort to disseminate information on the economic impact for Paraguay of the insufficient dredging and beaconage of waterways.	• Implementation and/or strengthening of a public-private institutional mechanism to implement and manage dredging and beaconage.

TABLE i.3 Primary Excess Costs Identified and Short-Term and Long-Term Recommendations to Eliminate Them			
PRIMARY EXCESS COSTS IDENTIFIED		**RECOMMENDATIONS TO ELIMINATE EXCESS COSTS**	
DESCRIPTION	**ESTIMATED TOTAL IMPACT (US$)**	**SHORT-TERM**	**LONG-TERM**
Delays due to poor roads Cost of excessive time for domestic transportation of raw materials from production sites to export locations, translating into delays in the rainy season, wear-and-tear on trucks, etc.	**$16,615,336**	• More-in-depth analyses of the impact of excess costs caused by insufficient rural roads. • Study the economic and financial feasibility of investing in rural roads.	• Based on the analyses and studies conducted, encourage these investments to be carried out. • Prioritize the expansion of the road network, in line with trade volumes and overland transportation costs. • Support cooperation between the public and private sector on policies, construction, and maintenance. • Encourage coordination of regional planning. • Devise a method to assess and monitor the condition, maintenance, and load capacity of road surfaces.
Delays in obtaining health certifications Excess costs due to delays in obtaining health certifications. Inventory costs stemming from delays in receiving health certificates required for exports.	**$7,232,951**	• Analyze an alternative to allow sector-related associations to jointly cover the relocation expenses of the needed inspectors. • In the specific case of the meat sector, try to reach an agreement with the Russian certifier in Buenos Aires to minimize delays in obtaining health certificates.	
Consular visa requirements The cost of having import documents stamped with visas issued by Paraguayan consulates is considered excessive because no services are provided in exchange; in the consultant's opinion, this violates international-trade rules.	**$6,801,600**	• Elimination of requirement to obtain consular visas, enabling the corresponding payment to be made through the Customs Fiscal Tax Management System (Sistema de Ordenamiento Fiscal Impositivo Aduanero, SOFIA).	• Definitive elimination of payments for consular visas; allocation in the national budget of the funds needed for the Ministry of Foreign Affairs (MRE).

TABLE i.3 Primary Excess Costs Identified and Short-Term and Long-Term Recommendations to Eliminate Them			
PRIMARY EXCESS COSTS IDENTIFIED		**RECOMMENDATIONS TO ELIMINATE EXCESS COSTS**	
DESCRIPTION	**ESTIMATED TOTAL IMPACT (US$)**	**SHORT-TERM**	**LONG-TERM**
Loss of merchandise in the preshipment process Excess cost caused by loss of merchandise due to theft or lack of suitable equipment.	**$5,085,551**	• Training for producers and exporters in adopting and using more efficient packing and handling procedures to reduce losses of or damages to products.	• Promoting the use of value-chain techniques, infrastructure, and equipment to reduce product losses and damages. For example, support could be provided to enhance incentives and/or financial assistance to promote investments in value-added services (refrigerated warehouses, packing services, etc.) which would have a direct impact on losses and damages.
Payment delays Financial costs stemming from delays in payments on merchandise.	**$4,291,192**	• Analyze the causes of delays in collecting payment on letters of credit. Adopt needed training and regulatory measures.	
Cargo Reservation Law Excess costs stemming from the Cargo Reservation Law (Law Nº 295/71).	**$3,491,037**	• Eliminate the requirement for a cargo reservation certificate for merchandise shipped under the Paraguayan flag. Unify certification for the push-tug.	• Eliminate cargo reservations
Customs brokerage fees Some customs brokerage fees are considered excess costs. Fees in Paraguay are excessive compared with those charged for similar operations elsewhere in the region. Customs brokerage fees are estimated to be 150% to 250% higher than the average for Uruguay and Argentina, because of the extreme amount of red tape in Paraguay's Customs system.	**$3,331,490**	• Comparative analysis of international brokerage fees and of regulations on fees. • Analyze the official and informal expenses for complying with Customs formalities and the feasibility of eliminating the requirement to file physical copies of documents.	• On the basis of the conclusions of this analysis, promote measures to reduce official and informal fees charged by customs brokers and encourage the elimination of the requirement to submit physical copies.
Registration procedures The registration fee charged for initiating a customs operation, which is duplicated by the information registration fee	**$3,041,620**	• Eliminate either the registration fee or the information registration fee.	

TABLE i.3 Primary Excess Costs Identified and Short-Term and Long-Term Recommendations to Eliminate Them			
PRIMARY EXCESS COSTS IDENTIFIED		**RECOMMENDATIONS TO ELIMINATE EXCESS COSTS**	
DESCRIPTION	**ESTIMATED TOTAL IMPACT (US$)**	**SHORT-TERM**	**LONG-TERM**
Delays in the delivery/receipt of containers and trucks Excess inventory costs stemming from insufficient containers and unavailability of trucks.	**$1,661,169**	• Analysis of the supply of and demand for land transportation and regulatory restrictions on container availability. • Implementation of deregulatory measures encouraging increased availability of containers.	• Systematically monitor the costs of and the market for land transportation, and implement permanent measures allowing for greater availability of transportation and containers. • Train producers and sectors on best practices in logistics management.
Delays in loading LCL containers Excess costs generated by loading LCL containers at the port due to a lack of cargo to fill them.	**$1,400,000**	• Analyze options for the State and the private sector to encourage container-consolidation operations.	
Delays in receiving merchandise Excess inventory costs generated by delays in receiving merchandise, due to impediments at Customs.	**$889,940**	• Modify Customs procedures to enable merchandise to be received in as little as 24 hours and at most in 48 hours.	
Photocopies Excess costs for photocopying brokerage documents that could be eliminated by introducing an electronic system.	**$858,810**	• Eliminate physical documentation with a technology-development program. An estimated 70% of these costs could potentially be saved through a system that avoids duplication and significantly reduces requirements for physical documentation.	
Fees charged by Paraguayan bonded warehouses Excess cost for which no services are provided in exchange.	**$848,807**	• Elimination of transshipment fees.	
Customs inspection Excess cost for a service that is not provided, although there is a need for it.	**$647,599**	• The private sector needs to insist on in-plant Customs inspections of containers, due to the implications for international transportation safety and the high risk of a legal action against a company in the event contraband is detected.	• Promote adopting the new international practice of taking photographs during container loading, to use as evidence of contents.

TABLE i.3 Primary Excess Costs Identified and Short-Term and Long-Term Recommendations to Eliminate Them			
PRIMARY EXCESS COSTS IDENTIFIED		**RECOMMENDATIONS TO ELIMINATE EXCESS COSTS**	
DESCRIPTION	**ESTIMATED TOTAL IMPACT (US$)**	**SHORT-TERM**	**LONG-TERM**
Miscellaneous expenses The "miscellaneous expenses" item in customs brokers' invoices, inasmuch it fails to identify the expenses, constitutes an excess cost.	**$571,131**	• Promote the elimination of this type of invoicing in Customs procedures.	
Gratuities Excess costs from the payment of gratuities for streamlining services provided by public entities.	**$351,760**	• Promote allowing all Customs procedures to be carried out electronically	
Certificate of origin Excess cost due to the requirement by the Ministry of Industry and Commerce (MIC) that duplicate visas be submitted for certificates, and that certificates be issued even when neither the customer nor the government of the destination country has requested them.	**$334,230**	• Eliminate the MIC's visa requirements for certificates of origin	• Eliminate requirements for a certificate of origin when not required by either the customer or the government of the destination country.
Customs transshipment fee Excess cost for which no service is provided in exchange.	**$273,090**	• Eliminate transshipment fees	
TOTAL OF EXCESS COSTS IDENTIFIED	**$135,065,869**		

Options for reducing excess costs for each product and corridor studied. To allow the private sector and specific individual sectors to prioritize efforts to reduce excess costs, the most significant costs are listed by product and corridor studied in **Table i.4** below. The data in the table might serve as the basis for listing the range of options so as to identify the particular interests of the distinct business sectors, reconcile them with the interests of business in general, and thus detect possible priorities. The prioritization of problems and their respective solutions is—rather than a linear or objective process focusing solely on economies of scale—a highly complex and subjective one; in addition to considering the impact of a particular excess cost, it takes into account political, circumstantial and other variables.

TABLE i.4 The Most Significant Excess Costs Identified, by Product/Corridor

Product (Corridor)		Most Significant Identified Excess Costs (representing more than 80% of the excess costs)	Estimated Impact of the Excess Cost in 2005 (US$)	% of Total Excess Costs
Soybean exports (River-sea – Netherlands)	1	Insufficient river dredging	$ 9,377,897	33%
	2	Delays in port access	$ 6,836,646	24%
	3	Losses during preshipment	$ 4,800,848	17%
Soybean exports (Land – Brazil)	1	Delays in border crossings	$ 2,654,536	57%
	2	Excess costs due to Customs	$ 1,477,611	31%
Frozen-meat exports (River-sea – Russia)	1	Delays in preshipment (land transportation, phytosanitary certifications, etc.)	$ 8,555,326	59%
	2	Excess costs due to Customs	$ 2,570,250	18%
	3	Insufficient river dredging	$ 1,725,113	12%
Chilled-meat exports (Land – Chile)	1	Excess costs caused by requirements of SENASA in Argentina	$ 1,596,632	54%
	2	Excess costs due to Customs	$ 438,282	15%
	3	Delays due to poor roads (during preshipment)	$ 276,602	9%
	4	Delays due to lack of availability of refrigerated transportation equipment	$ 276,602	9%
Wood exports (River-sea – USA)	1	Delays in raw-material imports due to border crossings	$ 12,434,284	82%
Sesame exports (River-sea – Japan)	1	Excess costs in preshipment stage because of delays in domestic transport, obtaining quality certificate	$ 1,422,377	68%
	2	Insufficient river dredging	$ 336,808	16%
Agrochemical imports (River-sea – China)	1	Excess costs due to Customs	$ 1,235,804	71%
	2	Insufficient river dredging	$ 454,119	26%
LCL exports (River-sea – USA)	1	Delays in loading LCL containers	$ 1,515,000	39%
	2	Delays due to poor roads (during preshipment)	$ 929,981	24%
	3	Insufficient river dredging	$ 532,500	14%
	4	Excess costs due to Customs	$ 510,336	13%
LCL imports (River-sea – USA)	1	Excess costs due to Customs	$ 1,077,924	85%
IT imports (Air – USA)	1	Excess costs in air transport	$ 7,536,170	63%
	2	Excess costs due to Customs	$ 4,482,732	37%
SUBTOTAL OF THE 10 MOST IMPORTANT EXCESS COSTS			$ 73,054,371	50%

Source: CARANA Corporation, Analysis, 2006

Quantifying the impact of Paraguay's landlocked status. Another significant aspect of this study is the attempt to identify excess costs stemming specifically from Paraguay's landlocked status. This analysis, summarized in **Table i.5** below, indicates that 47% of total excess costs stem from the country's landlocked status; however, 52% of the excess costs arising from the country's landlocked status are due to internal factors and 48% to external factors (in Paraguay's neighbors). Similarly, this analysis also examined excess costs overall, 77% of which are due to factors within Paraguay and 23% to external factors.

TABLE i.5. Estimated excess due to Paraguay's landlocked status, 2005

	US$	%
Total excess costs caused by internal factors	$ 104,241,698	77%
Total excess costs caused by external factors	$ 30,824,169	23%
Impact of landlocked status on excess costs	**$ 62,944,774**	**47%**
Impact of landlocked status caused by internal factors	**$ 38,758,652**	**62%**
Impact of landlocked status caused by external factors	$ 23,903,426	38%

Source: CARANA Corporation Analysis, 2006

Methodology of the study. The costs and excess costs were calculated after an intense effort to compile and process cross-sectional data, from March to June 2006. Thanks to the high degree of interest and openness in the business sector, a large quantity of highly valuable data was obtained. After analyzing this data, the consultants first discussed the results directly with CNCSP directors. Next, a series of workshops was held to discuss the models used as well as conclusions and recommendations put forth. These workshops and discussions made it possible to carry out crucial adjustments in all the corridors except the IT area. The results of the analysis of this area are preliminary, inasmuch as it was not possible to validate them.

All the results are in fact considered to reflect to typical, benchmark operations, insofar as the actual time and cost of each company's operations constitute undoubtedly private, confidential trade information and it is highly unlikely that any two operations are identical. These results are valuable in two respects:, firstly, as a benchmark on the basis of which conclusions can be drawn and recommendations made for typical operations; and secondly (thanks to the methodology used), as a model which Paraguayan companies can use to assess and monitor their costs and excess costs.

Private-sector entrepreneurs and the CNCSP's directors played a highly significant role in the performance of the study. This was not a case of "laboratory research," conducted by consultants working in isolation, but rather a joint effort between consultants and private-sector managers. Similarly, the conclusions drawn reflect a broad interpretation of the opinions and data obtained from the private sector and consultants, which have all informed this report, and the CNCSP did not censor a single element or try to influence the results in any way. The CNCSP's support for the work undertaken in this study was crucial. Its willingness to have "all the cards put on the table" and all problems brought to light, including those caused by inefficiencies in the private sector itself, reflect a courageous attitude, as well as the institution's desire to place itself at the service of the common good.

SECTION 3. TRANSPORT AND LOGISTICS PROCESSES AND COSTS

3.A METHODOLOGY

By compiling and analyzing data on the cost of services, specific problem areas in the transport and logistics chain can be identified, so that the activities most likely to effect a change can be given priority. The following section describes the methodology that was used and the results of a cost analysis that was conducted to analyze the relative competitiveness of Paraguay's transport and logistics services for the exports and imports that significantly affect the performance of the economy.

3.A.1 Prior experience

This is the most recent of five transport and logistics studies conducted by the CARANA Corporation using a methodology developed and implemented with USAID funds under the Trade Enhancement for the Services Sector (TESS) contract. The methodology includes multiple levels of analysis for:

1. Developing a transport and logistics map that identifies all transactional participants in foreign trade and evaluating their role and effectiveness in the logistics chain.
2. Identifying constraints in the operational environment for transport and logistics services.
3. Identifying costs, excess costs, and processes throughout an exportation and importation chain.
4. Preparing specific cases for identifying constraints that have a significant impact on the competitiveness of a product or country.

The earlier transport and logistics studies were conducted in Nicaragua, Indonesia, Mali, and Bulgaria. These countries, each of which faces different challenges and problems in the transport and logistics sector, were chosen to highlight differences in geography, development level, and types of exports:

- **Nicaragua** was chosen as an example of a country that has no primary port of export, despite being in close proximity to the United States market, the largest in the world.
- **Indonesia** is a country that consists of more than 17,000 islands spread out over an area nearly equal to the breadth of the United States, has an enormous domestic market, and is located in close proximity to a major regional market (ASEAN, China, and Japan).
- **Mali** is an example of a highly impoverished and indebted landlocked country plagued by transport and transit problems that has an economy that is very dependent on exports of raw materials, with few manufactured goods or value-added activities.
- **Bulgaria,** with its major textile and clothing sector, is located in close proximity to the markets of the European Union and the main producers in the Euro-Mediterranean zone. The country's ability to participate competitively in the textile and clothing industry largely depends on having an efficient, fast, safe, and inexpensive transport and logistics system.

In each of these studies, the CARANA methodology was adapted to the priority sectors targeted for development in each country. The results and problems identified varied by logistics chain, transport modality, and local conditions. However, several common challenges and opportunities were identified. **Table 3.1** summarizes the earlier transport and logistics studies:[3]

TABLE 3.1. Transport and logistics studies recently prepared by USAID/CARANA

Country	Products	PRIMARY CHALLENGES							
		Systemic Factors				Sectoral Factors			
		Infra-structure	Domestic transport service	Transport policy	Customs and border crossings	Pre-shipment	Consolida-tion of Cargo	Availability/ use of services/ equipment	Value chain logistics manage-ment
Nicaragua	Textiles, coffee, beans, cheese, fresh fuits and vegetables	•	•		•	•	•	•	•
Indonesia	Rubber, shrimp, coffee, coca, textiles, plywood, furniture	•	•	•	•	•	•	•	•
Mali	Cotton, cattle, gold, mangos	•	•	•	•	•	•	•	•
Bulgaria	Textiles, footwear	•		•	•				•

Source: CARANA Corporation, 2006

3.A.2 Paraguay ~ Scope of the analysis

For this study in Paraguay, the methodology consisted of four main stages:

1. Definition of the scope of the analysis
2. Identification of information sources
3. Survey of costs
4. Analysis of the information and attainment of results

3.A.2.1 Definition of the scope of the analysis

During this stage, Paraguay's international export and import transactions were studied, along with the geographic context of the country, to identify products for inclusion in this study, the primary trading partners by product, and the commercial transport corridors. The products and transport corridors were selected based on the following criteria (for more information, see section 3.B.1. Products and corridors, p. 4):

- Record of exports or evidence of growing interest in exporting the product
- Current trade volumes
- Coverage of frequently used transport modalities
- Importance to the Paraguayan economy

[3] More information on these studies can be found on the CARANA website: http://www.tessproject.com/products/special_studies/

In the case of exports, the analysis focused on transport and logistics costs from the product's point of origin, such as the producer's farm, to the first point of arrival in the country of destination. Production costs were not included.

For imports, logistics and transport costs were analyzed from the point at which the product enters the port of origin to its arrival at the importer's facilities. To determine domestic freight costs, for both imports and exports, an average distance was established, for the purpose of simplifying the analysis.

3.A.2.2 Identification of information sources

During the second stage, businesses operating in the sector were identified and selected. Next, interviews were conducted, with an average of three per sector. In other words, three separate land transport companies, three exporters for each product selected, three shipping agencies, etc., were interviewed.

Through interviews and consultations of a range of information sources, the chief transport and logistics costs associated with the export and import products were ascertained, in accordance with the corridors used, making it possible to set benchmark values for each step in the logistics and transport process. A more detailed description of this cost structure is provided in subsequent sections of this paper. Lastly, the information was processed.

Subsequent sections of this paper will provide a more extensive account of the results obtained for each type of product.

3.B ADAPTATION TO THE PARAGUAYAN CONTEXT

The trade routes most used for the products studied were selected for the analysis and are presented in **Table 3.2**. This study is based on the corridors presently in use to export or import the selected products.

TABLE 3.2. Products and corridors selected

PRODUCT	EXP/IMP	TYPE OF SHIPMENT	CORRIDOR		
			Mode	ORIGIN	DESTINATION
Soybeans (unprocessed)	Export	Truck	Land	Ciudad del Este	Cascavel (Brazil)
Soybeans (unprocessed)	Export	Barge	River-sea	Asunción- Nueva Palmira/ Rosario	Rotterdam (Holland)
Refrigerated meat	Export	Refrigerated truck	Land	Asunción	Santiago (Chile)
Frozen meat	Export	40' FCL	River-sea	Asunción- Buenos Aires/ Montevideo	St. Petersburg (Russia)
Wood moldings	Export	20' FCL	River-sea	Asunción- Buenos Aires/ Montevideo	Miami (U.S.)
Sesame seeds	Export	40' FCL	River-sea	Asunción- Buenos Aires/ Montevideo	Osaka (Japan)
Agrochemicals	Import	20' FCL	River-sea	Shanghai- Buenos Aires	Asunción
LCL	Export	9 barrels	River-sea	Asunción- Buenos Aires/ Montevideo	Baltimore (U.S.)
LCL	Import	346 boxes	River-sea	Houston- Buenos Aires	Asunción
Information technology	Import	1,200 Kg	Air	Miami	Ciudad del Este

The rationale for the selection of each product and corridor is described in the following section.

3.B.1 Products and corridors

3.B.1.1 Soybeans

- Soybeans are one of Paraguay's main export crops, accounting for 41% of the total value of exports, on average.
- Soybean production is more mechanized than sesame production, inasmuch as the minimum efficient production unit is higher. Soybean farmers have medium and large farms and most of them use standardized farming methods. Approximately 2 million hectares of soybeans are planted, for an average yield of 4 million tons, of which roughly 70% is exported as beans and the remainder is processed, especially as soybean oil.[4]

Tabla 3.3 Annual production and use of soybeans, 1989-2005

Year	Exported		Processed		Seed	Total
	Ton.	%	Ton.	%	Ton.	Ton.
1989	945,375	88.3	99,741	9.3	25,000	1.070.116
1990	1,559,897	89.6	146,738	8.4	35,000	1.741.635
1991	866,525	74.0	269,141	23.0	35,000	1.170.666
1992	831,885	60.4	519,895	37.8	25,000	1.376.780
1993	1,390,259	69.2	558,682	27.8	60,000	2.008.941
1994	1,174,761	62.1	666,748	35.3	50,000	1,891,509
1995	1,537,603	66.6	720,000	31.2	50,000	2,307,603
1996	1,587,428	65.9	741,000	30.8	80,000	2,408,428
1997	2,150,000	77.6	541,000	19.5	80,000	2,771,000
1998	2,293,601	76.8	641,000	21.5	53,600	2,988,201
1999	2,298,758	77.1	596,000	20.0	85,300	2,980,058
2000	2,025,552	70.6	800,871	27.5	75,000	2,911,423
2001	2,509,948	71.7	917,231	26.2	75,000	3,502,179
2002	2,385,979	67.3	1,085,695	30.6	75,000	3,546,674
2003	3,167,193	70.1	1,260,822	27.9	90,000	4,518,015
2004	2,664,415	68.0	1,172,000	30.0	75,000	3,911,415
2005	2,882,182	71.3	1,077,646	26.7	81,000	4,040,828

Source: CAPECO

- The main areas of production are in the eastern part of the country, in the departments of Alto Paraná (33%), Itapúa (25%), and Canindeyú (17%). Another production area in expansion is San Pedro (5%).
- The static soybean storage capacity is 5 million tons.
- Between 2000-2003, 42% of the soybean crop was exported overland and 56% was exported by river, but the prohibition on shipping transgenic soybeans from the port of Paranaguá and tariff problems at the border prompted a change in the logistics system. At present, soybeans are transported by river to the ports of Nueva Palmira or Rosario, and are then shipped to ports overseas, Rotterdam primarily. From 2004-2005, 84% of the soybean crop was transported by river-sea, 12% was shipped overland, and the rest was shipped by rail (3.2%).

3.B.1.2 Meat

- Meat and offal exports constituted 8% of Paraguay's exports, on average, during 2000-2005.
- The main areas of production are in the eastern and western parts of the country, in the departments of San Pedro, Concepción, Amambay, Neembucú, Villa Hayes, and Boquerón.
- The largest export markets are Russia and Chile, which purchase 48% and 18% of exports, respectively. Products exported to Russia are shipped by river-sea from the ports of Nueva Palmira and Buenos Aires. Meat is shipped overland to Chile through Argentina.
- Delays in receiving animals for slaughter due to poor road conditions affects the entire logistics chain and periodically causes delays in the delivery of the container at the port of shipment.

[4] CAPECO, 2004-5.

- There are 17 meatpacking plants in the country.[5]

3.B.1.3 Wood

- Wood has traditionally been exported without much processing, which means a highly valued product is sold without the value that could be added through processing. However, given the growing importance of value-added products, such as parquet and moldings, this product was selected.[6]
- Exports of wood, principally in the form of parquet and moldings, account for 6% of Paraguay's total exports. These value-added products are exported from Paraguay under tariff headings 4409 and 4418 (moldings).
- Based on a comparison of data reported by Paraguay and the International Trade Center (Intracen), the United States receives 8% of Paraguayan products exported under tariff heading 4409, but 90% of the products exported under tariff heading 4418. In other words, the United States market is a major buyer of manufactured wood products.
- Although there are timber-harvesting zones in San Pedro, Canindeyú, and Concepción, acute scarcity is requiring that new areas of supply be considered, including the area of El Dorado, in Misiones, Argentina, and the area of Santa Cruz de la Sierra. In certain cases, lumber must be transported across two or more borders to reach the mill.
- Manufacturers of wood moldings export their products primarily to the United States through a distributor chain.
- Wood was chosen because it is a value-added product that is shipped in containers to ports on the eastern seaboard of the United States, the final destination. Products entering that market are subject to a preferential tariff elimination regime.
- Wood products are exported in 20' containers. The cargo is consolidated at the mill.

3.B.1.4 Sesame seeds

- Sesame seeds accounted for 1.5% of total Paraguayan exports in 2004, and its share of the export market has expanded rapidly since 2000. Sesame is a source of income for farming families that replaces cotton.
- Sesame is a crop grown on family farms. It is often cultivated on a small scale, since the minimum production unit is low, which allows families with small farms to produce it. A typical sesame operation is one to two hectares in size.
- Sesame farmers deliver the seed in bags directly to buyers or collection centers. These centers warehouse the product temporarily until a sufficient volume has been amassed to justify transporting it for shipment to the metropolitan area of Asunción. A truck makes multiple stops to pick up the product. The farmers are not always ready to deliver the product, which complicates the collection process.
- The centers of sesame seed production in Paraguay are in the eastern part of the country, especially in the departments of San Pedro and Concepción, and to a lesser extent in Caaguazú, Itapúa, and Alto Paraná.

[5] DENDE Foundation: Meat plan, 2006.
[6] Paraguay's Investment and Export Network (REDIEX) is set to officially launch the Sector Table for Forest Products, which is another important category of traditional export products, but with little value added.

- The crop is divided into two seed classes that vary in value. Based on quality, they are exported as either oil or seeds.
- The average value of a ton of sesame seeds is US$ 1,100.
- Most exports are shipped to Asia and Japan (63%), Germany (7.7%), and Korea (3.9%) are the main export markets. Sesame seeds are not subject to tariffs in these markets.
- The product is exported in containers by river to the ports of Nueva Palmira or Buenos Aires, where it is shipped by sea to ports in Asia or northern Europe.

3.B.1.5 Agrochemical products

- Insecticides and fertilizers are imported primarily from China (35%) and Brazil (17%).[7]
- Containers are unloaded at the port and transferred to trucks, which deliver the agrochemicals to production areas or the importers' warehouses or bonded warehouses.
- Most of the imports arrive in barrels.

3.B.1.6 LCL general export and import cargo

- LCL (less than container load) export and import cargo, as opposed to FCL (full container load) cargo, consists of any product that is exported or imported in volumes less than the full cargo volume of a container.
- This type of export and import operation is important in international trade, because there are small exporters and importers that do not have sufficient cargo to fill a container, as well as large importers and exporters that only need to send a sample or replacement part.
- There is a vast array of products that are exported, such as essential oils, ka'a heé, samples, etc., and products that are imported, such as toys, chemicals, replacement parts, etc. This corridor was chosen in consideration of the fact that while large producers are able to take advantage of economies of scale, export operations can be very expensive for small and medium-sized enterprises because they do not have sufficient volume to fill a container. The consolidation of multiple shipments is handled by consolidation companies, which are international shipping agencies or freight forwarders, and these agents include in the price the opportunity cost of the possibility of not being able to fill the containers.

3.B.1.7 Computer products

- The flows studied correspond to products imported to Ciudad del Este on weekly charter flights from Miami. Based on the survey, which is a preliminary analysis, unlike the one done for the other products studied, there are an average of two flights per week. In addition to computer products, these flights carry electronic products.
- Paraguay's air cargo market suffers from a lack of direct international passenger flights, with the exception of several regional destinations, which means a dearth of regular airline services for air cargo, making the Paraguayan market dependent on transshipments through Sao Paulo and Buenos Aires. This puts this transport modality at a competitive disadvantage due to the additional costs it entails. The average price for these goods on the

[7] In the case of imports from China, the discrepancies between the figures reported by Paraguay and China can be attributed to transport costs. In the case of Brazil, the discrepancies are more than double, and so certain informal processes —subinvoicing, contraband—involving the imports can be presumed.

aforementioned charter flights is on the order of US$ 100 per kilogram, and the current average freight charge is US$ 2.05, which is an estimated US$ 0.25 higher than in the Sao Paulo and Buenos Aires markets.

3.B.2 Definition of cost categories

For the cost analysis for the transport and logistics chain, a sequential integrated framework was developed, which was used to obtain information. Because every cost in the cases reviewed as part of the surveys is not always known, shared, or immediately available, a variety of methods were applied to identify or estimate only the most relevant information.

For example, sometimes the information provided on costs was partial, consolidated, or submitted in a form that made it impossible to break down all the subcomponents. The objective was to prepare a table of international trade averages and benchmarks and the logistical problems in Paraguay, which served as a guide for analyzing the data.

An activity-based approach was applied, for the purpose of analyzing transport and logistics costs.

The activities involved in the exportation and importation process were broken down into the different steps, according to the type of transport. They show the movement of goods from the producer to the buyer, in the case of exports, and from the exporting port to the importer's facilities in Paraguay, in the case of imports. Although the processes vary based on the mode of transport used, an attempt was made to find a standard cost structure that could be adapted to the different characteristics of the corridors and products selected.

The steps and costs are defined as follows:

Preshipment

Preshipment activities, which include consolidation, packing and storage of goods, transport to the exporter, and any other activity that is needed or performed prior to the cargo's shipment to its final destination. Also included are costs associated with inspections and certifications required by Paraguay's health authorities.

Transfer to port of exit

This basically includes overland domestic freight charges from the exporter's facilities to the port and any other logistical cost that arises during this stage of the process.

Port

Included are the costs associated with waiting and entering and departing the port.

Customs

This stage encompasses all activities related to Customs and the customs broker. Also included are certifications and inspections required by the client or the importing country and in the case of land transport, the costs associated with border crossings, etc.

Transportation to destination

This includes not only the cost of shipping to the destination, but also expenses related to insurance, handling, and port services in the case of river-sea transport.

Inventory and financial costs

Inventory and financial costs are calculated throughout the exportation and importation process. This category is an attempt to calculate costs that arise as a result of cargo being detained, and from the export or import process being prevented from proceeding, which causes losses for the agents in the foreign trade chain due to their inability to collect payment properly or on time. (See “Time as a Trade Barrier” on the following page.)

The charts below illustrate the cost categories developed by type of transport and type of trade operation, either export or import (Chart 3.1, Chart 3.2, Chart 3.3).

CHART 3.1. **River-sea exportation**

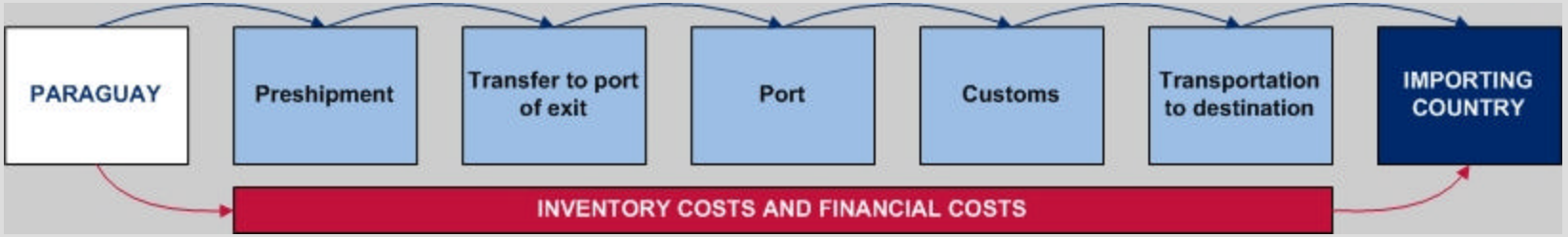


CHART 3.2. **Overland exportation**

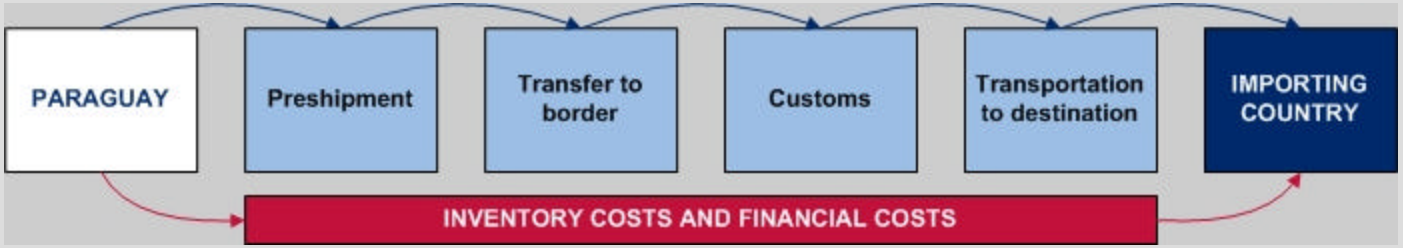
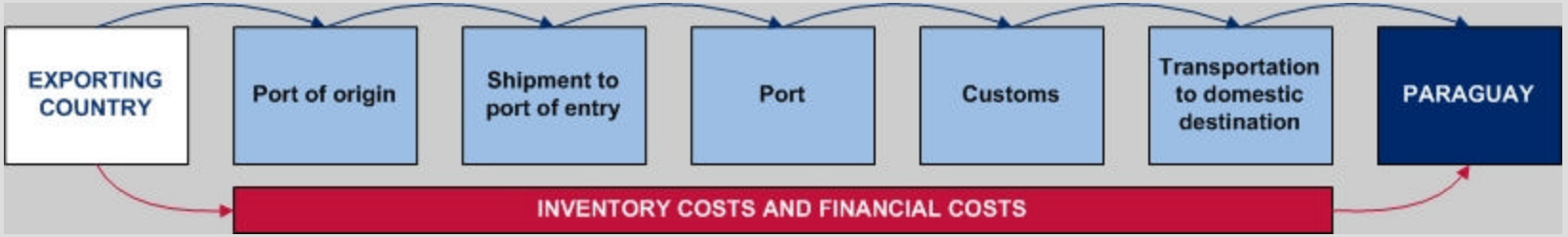


CHART 3.3. **River-sea importation**



"TIME AS A TRADE BARRIER"

David Hummels' paper "Time as a Trade Barrier" studies the importance of time as a trade barrier and estimates the magnitude of time costs, relating them to trade patterns and the international organization of production. Hummels' model analyzes the decision an export company makes to trade at high speed using an expensive means of transport, air transport, as opposed to a more affordable, but slower form of transport, sea transport.

This model uses an extensive database of prices, rates, quantities, and speeds of different transport modes in United States trade. Variations across exporters and commodities in the relative price/speed trade-off identify a willingness-to-pay for time savings in shipment. This willingness-to-pay is translated into a direct measure of the ad valorem barrier equivalent of an additional day's travel time.

As indicated throughout Hummels' paper, "time" is a significant trade barrier for all products, although some products are more time sensitive than others, including computer products and products that are closely tied to a specific occasion or date, such as chocolate eggs during Easter or flowers on St. Valentine's Day, which cannot be sold if they do not arrive on time.

Using econometric models, Hummels found that in the case of manufactured products, each day of travel is worth an average of 0.8 percent of the value of the cargo per day, or an average of 16 percent for a 20-day trip. By averaging the results obtained for the various products studied by Hummels, it can be concluded that every travel day is worth an average of 0.5 percent of the value of the cargo per day.

Based on Hummels' work, this study has adopted a rate of 0.3 percent in the case of raw materials, such as soybeans; 0.5 percent for products with greater value added, such as frozen or refrigerated meat; and 0.8 percent for products with considerable value added, such as computer products.

Estimates indicate that each additional day in ocean transport reduces the possibility that a country will export to the United States by 1 percent, for all goods, and 1.5 percent, for manufactured goods. An important point made in this paper, even though it is not quantified in the econometric model, is that on average developing countries exhibit three main characteristics. First, most of these countries are further away from destination markets. Second, the shipping volumes for these countries are smaller, and so a larger number of stops is required to fill a vessel. Third, the frequency of visits is lower. In the latter case, production times must be adjusted endogenously, and so domestic transport and production times become a chief factor in the export process.

3.B.3 Primary information sources

The costs and details of commercial transactions and the information provided in this paper were gleaned from interviews, documents, Web pages, and activities to monitor participants in foreign trade.

More than 130 people involved in this subject matter were directly interviewed. Each interview lasted approximately one hour, and a point of contact was established with each interviewee for future consultations during the work period. The following entities were among those interviewed.

Table 3.4 Primary information sources

Private sector	International community	Public sector
• Producers and manufacturers • Importers • Shipping lines • Port terminals • Freight forwarders • Land transport companies • Air transport companies • Producer associations • Business associations • Paraguay Railroads	• USAID / Paraguay • Paraguay Vende • World Bank • Inter-American Development Bank • ECLAC [Economic Commission for Latin America and the Caribbean] • UNCTAD [United Nations Conference on Trade and Development]	• Advisor to the President of the Republic • Office of the Director General of Customs • Ministry of Industry and Commerce • Ministry of Foreign Relations • REDIEX

For the secondary information sources referred to in this study, see the bibliography in Annex B.

3.B.4 Information processing

In accordance with the guidelines set in points A and B, the information collected based on the average cases for each export and import selected was processed. For each product-corridor, an Excel file was created consisting of three main spreadsheets,[8] subdivided into the following five components:

- "Exportation process"
- "Analysis of cost categories"
- "Analysis of excess costs"
- "Potential savings"
- "Charts"

Export process: The first part of this component, titled "general information" or "assumptions," indicates the parameters set, the product, the route, volume, FOB and CIF price, and other parameters needed to calculate the logistics and transport costs, such as, for example, the parameter for calculating the inventory cost.[9] The second part indicates all transport and logistics costs that arise during the exportation and importation process. In each case, costs are calculated per ton and depending on the type of product, for a 20 or 40-foot container, truck, barge, or average shipment, measured in cubic meters in the case of LCL cargo (see example of spreadsheet for obtaining data, Chart 3.4).

[8] Attached in Annex A.
[9] "Time as a Trade Barrier," on the preceding page.

This component also classifies excess costs as private and public costs, based on the origin thereof. Importantly, the excess costs include excess costs related to inventory and financial expenses, as well as tariff overcharges and charges for services not rendered.

CHART 3.4. Categories of data observed and calculated in the exportation process

	OBSERVED COSTS			CALCULATED COSTS	
	DIRECT COSTS	INDIRECT COSTS	EXCESSIVE DELAYS	INVENTORY COST	FINANCIAL COST
Preshipment	Packing Freight Consolidation Quality Control Health Inspection	Merchandise Losses Profit Losses	Delay in freight Delay in consolidation Delay in withdrawing containers Delay in health inspection	f(time, opportunity cost)	F(time, interest rate, or $/hour of delay)
Transfer to port of exit	Freight	Merchandise Losses Profit Losses	Delay at border crossing (land transport)	f(time, opportunity cost)	F(time, interest rate, or $/hour of delay)
Port	Port Fee Cartage	Merchandise Losses Profit Losses	Delay in access to port	f(time, opportunity cost)	F(time, interest rate, or $/hour of delay)
Customs	Inspection Registration procedures Customs seal Certificate of origin Paraguayan Free Zone Deposit fee Brokerage fees	Bribes	Delay in customs inspection Delay due to insufficient documentation	f(time, opportunity cost)	F(time, interest rate, or $/hour of delay)
Transportation to destination	River and sea freight B/L fee Logistic fee Stowage Transshipment port tax	Merchandise Losses	Delays in river transport Delays at transshipment port	f(time, opportunity cost)	F (interest rate, days)
Financial Expenses	Insurance Collection costs		Delay in collection	f(time, opportunity cost)	F (interest rate, days)
	TOTAL DIRECT COSTS	TOTAL INDIRECT COSTS	TOTAL EXCESSIVE DELAYS	TOTAL INVENTORY COSTS	TOTAL FINANCIAL COSTS

Analysis of cost categories

This component summarizes costs according to the stage in which they arise, grouping them as costs related to preshipment, land transportation, customs (and/or requirements of other government agencies), water transportation, and collection, with a per-ton benchmark cost calculated in each stage.

Analysis of excess costs

This consists of an analysis of the ratio of direct and excess costs to the FOB value of the product under study, and the public and private-sector share of the excess costs.

Potential savings

In the next stage, losses due to excess costs are analyzed, in accordance with the volume exported and imported in the last annual statistical period available, in a study

that covers the volumes exported and imported at the national level, and the savings that could be obtained from an elimination of the excess costs.

Charts

Lastly, this component presents the information visually using different charts.

SECTION 4. CONCLUSIONS AND RECOMMENDATIONS

The first part of this section, 4.A, provides a sectoral comparison of the excess costs detected in each of the corridors/products. A macro analysis of the situation is performed in 4.B by extrapolating conclusions about the national situation from those reached at the sectoral level. Conclusions and recommendations are presented at the end of the section, in part 4.C.

The analysis of the transactions in each transport chain reveals that different bottlenecks and problems arise in each of the branches studied, and it would seem that the limitations and obstacles currently generating excess costs fall into two broad categories: **specific problems in the "Value Chain"** and **"Systemic" problems**. These problems should, however, be viewed as opportunities:

Problems in the value chain

- Under utilization of preshipment practices
- Under utilization of equipment and services
- Under utilization of potential value-added and logistics tools

Systemic problems

- Deficient infrastructure (hardware)
- Deficient regulatory framework (software)
- Deficiencies in the transport and logistics sectors

These problems occur at two levels in Paraguay: at the *internal* or domestic level; and at the *external* or international, in other words 'neighboring-country', level. Certain aspects of Paraguay's regulations affect operations abroad[10] and also generate problems at the external level.

4.A SECTORAL COMPARISON

The direct and indirect costs in each transport chain are analyzed and presented in the preceding section (**3.C. Results**) with a view to identifying and quantifying the excess costs that most affect corporate and sectoral competitiveness. One significant conclusion drawn from these analyses is that the problems identified in the transport and logistics sectors have a heterogeneous economic impact in the various sectors.

To allow the private sector and specific individual sectors to prioritize efforts to reduce excess costs, the most significant costs are listed by product and corridor studied in **Table 4.1** below. The data in the table might also serve as the basis for listing the range of options so as to identify the particular interests of the distinct business sectors, reconcile them with the interests of business in general, and thus detect possible priorities. It should be pointed out that the

[10] For example the Paraguayan free zone deposit fee, electronic seals, etc.

prioritization of problems and their respective solutions is not a linear or objective process focusing solely on economies of scale, but a highly complex and subjective one; in addition to considering the impact of a particular excess cost, it takes into account political, circumstantial and other variables.

TABLE 4.1. The most significant excess costs identified by product/corridor

Product (Corridor)		Most Significant Identified Excess Costs (representing more than 80% of the excess costs)	Estimated Impact of the Excess Cost in 2005 (US$)	% of Total Excess Costs
Soybean exports (River-sea – Netherlands)	1	Insufficient river dredging	$ 9,377,897	33%
	2	Delays in port access	$ 6,836,646	24%
	3	Losses during preshipment	$ 4,800,848	17%
Soybean exports (Land – Brazil)	1	Delays in border crossings	$ 2,654,536	57%
	2	Excess costs due to Customs	$ 1,477,611	31%
Frozen-meat exports (River-sea – Russia)	1	Delays in preshipment (land transportation, phytosanitary certifications, etc.)	$ 8,555,326	59%
	2	Excess costs due to Customs	$ 2,570,250	18%
	3	Insufficient river dredging	$ 1,725,113	12%
Chilled-meat exports (Land – Chile)	1	Excess costs caused by requirements of SENASA in Argentina	$ 1,596,632	54%
	2	Excess costs due to Customs	$ 438,282	15%
	3	Delays due to poor roads (during preshipment)	$ 276,602	9%
	4	Delays due to lack of availability of refrigerated transportation equipment	$ 276,602	9%
Wood exports (River-sea – USA)	1	Delays in raw-material imports due to border crossings	$ 12,434,284	82%
Sesame exports (River-sea – Japan)	1	Excess costs in preshipment stage because of delays in domestic transport, obtaining quality certificate	$ 1,422,377	68%
	2	Insufficient river dredging	$ 336,808	16%
Agrochemical imports (River-sea – China)	1	Excess costs due to Customs	$ 1,235,804	71%
	2	Insufficient river dredging	$ 454,119	26%
LCL exports (River-sea – USA)	1	Delays in loading LCL containers	$ 1,515,000	39%
	2	Delays due to poor roads (during preshipment)	$ 929,981	24%
	3	Insufficient river dredging	$ 532,500	14%
	4	Excess costs due to Customs	$ 510,336	13%
LCL imports (River-sea – USA)	1	Excess costs due to Customs	$ 1,077,924	85%
IT imports (Air – USA)	1	Excess costs in air transport	$ 7,536,170	63%
	2	Excess costs due to Customs	$ 4,482,732	37%
SUBTOTAL OF THE 10 MOST IMPORTANT EXCESS COSTS			$ 73,054,371	50%

Source: CARANA Corporation, Analysis, 2006

4.A.1 The most common excess costs

Delays at border crossings. For imports and exports that are transported overland, the delays at border crossings and the excess costs they incur (inventory costs, gratuities, etc.) considerably raise total excess cost figures. In the land transportation of soybean exports, for example, delays at the border crossing between Paraguay and Brazil represent 57% of excess

costs. In the wooden molds sector, delays at the border faced by raw material imports from Argentina raised costs by US$ 12.4 million in 2005.

Insufficient river dredging. Insufficient dredging accounts for 12% to 33% of the identified excess costs and has a particularly marked impact on the soybean export sector and the frozen meat export sectors, in which it generated estimated losses of US$ 9.4 million and US$ 1.7 million, respectively, in 2005.

Customs-related excess costs. The excess costs related to the 'Customs' stage of import and export activities, which includes meeting the various demands of other government agencies as well, (Ministry of Industry and Commerce, Ministry of Foreign Affairs, Ministry of Agriculture, etc.) are most noticeable in products transported overland, in the import corridors, and in the frozen meat sector. Frozen meat exports suffered losses of US$ 2.5 million in 2005 as a result of the excess costs derived from the tariff barriers erected by the Argentine health authorities. Customs procedures and expenses account for 85% of the excess costs identified in LCL cargo imports, and 37% of excess costs in IT imports.

Excess costs in the preshipment stage. One of the important conclusions drawn from the study is that a high portion of excess costs occur in the preshipment stage of nearly all the products and corridors studied. In the soybean sector, US$ 4.8 million are lost during the preshipment stage due to merchandise shrinkage. In the frozen meat sector, delays in obtaining health certificates incur losses of US$ 8.5 million. In the sesame seed sector, inefficiencies in the domestic transport system and problems obtaining containers and certificates of quality result in US$ 1.4 million of excess costs.

4.A.2 Exclusively sectoral excess costs

Although many of the problems faced are common to many groups within the private sector, some excess costs affect certain sectors in particular. The most important of these are outlined below:

Refrigerated meat - Demands made by SENASA in Argentina. Section 3.C Results identifies and estimates the economic impact of the tariff barriers imposed on goods in transit in Argentine territory between Paraguay and Chile by the Argentine National Service for Animal Health (Servicio Nacional de Sanidad Animal – SENASA). These generate delays and consequently excess costs (inventory costs, truck-related profit losses, etc.) of around US$ 1.6 million.

Refrigerated meat – Shortage of refrigerated transport equipment. The shortage of refrigerated trucks in the transport chain for refrigerated meat exports to Chile is conservatively estimated to have generated losses of US$ 276,000 in 2005.

LCL cargo – Delays in cargo consolidation. The costs of LCL (less than container load) shipments for small and medium-size enterprises (SMEs) are very high. One of the main excess costs identified in the study is the excess cost incurred in the cargo consolidation process. Some 39% of excess costs (US$ 1.5 million) in this type of transport chain are the result of delays in the LCL container consolidation process. These excess costs are a clear barrier to trade for SMEs that are not in a position to export their produce in full containers.

4.B MACROANALYSIS

This section provides an analysis of the macro-level impact of the excess costs identified on the import and export processes referred to above. It should be pointed out that although the detected excess costs were extrapolated to the macroeconomic level, the lack of statistics on transport, customs and other factors made this task difficult. The values obtained are therefore conservative, and many only refer to the ten corridors studied and their 2005 import and export volumes.

4.B.1 Preshipment

4.B.1.1 Poor roads

Table 4.2 below shows that, according to the 2005 export volumes of soybean, meat, wood, sesame seed and LCL cargo, the delays caused by deficient road systems in the preshipment stage generated, in terms of inventory costs and profit losses, US$ 7,449,494 and US$ 9,165,839 in excess costs in the Paraguayan economy, respectively, and US$ 16,615,336 in total excess costs.

TABLE 4.2. Excess Costs due to poor roads during the Preshipment Stage for the products and corridors studied (2005)

Corridor	Delays caused by poor road conditions	%	Profit Loss	%	Total
	US$ in 2005		US$ in 2005		US$ in 2005
River-sea soybean exports	180,032	2%	1,684,508	18%	1,864,54
Land soybean exports	23,851	0%	215,194	2%	239,04
River-sea frozen meat exports	2,135,854	29%	946,347	10%	3,082,20
Land refrigerated meat exports	276,602	4%	0	0%	276,60
River-sea wood exports	4,255,159	57%	4,901,943	53%	9,157,10
River-sea sesame seed exports	378,000	5%	697,846	8%	1,075,84
River-sea agrochemical	0	0%	0	0%	
River-sea LCL exports	200,000	3%	720,000	8%	920,00
River-sea LCL imports	0	0%	0	0%	
	7,449,497	**100%**	**9,165,839**	**100%**	**16,615,336**

Source: CARANA Corporation Analysis , 2006

Poor roads do not seem to generate any kind of excess cost in the two imports studied, possibly because an average distance of only 100 Km return (from Asuncion) for agrochemicals, and 250Km return (from Asuncion) for imported LCL cargo was considered in the calculations.

It should be pointed out that the US$ 16.6 million in excess costs correspond only to the export products and corridors studied, as it was not practical to study all Paraguay's imports and exports. This figure is therefore highly conservative. The imports and exports not studied most probably also suffer from profit losses and inventory costs incurred due to the lack of road infrastructure, and the level of excess costs at the macroeconomic level is therefore almost certainly far higher than US$ 16.6 million.

4.B.1.2 Other excess costs

Other excess costs in the preshipment stage that are not common to all the exports studied, but which may be incurred in the case of other imports and exports not included in the study, were also detected. These included: merchandise loss; inventory costs caused by delays in delivery and the receipt of containers and trucks; and delays in the issuance of certificates, as well as excess costs related to health certificates and gratuities. **Table 4.3** below shows the excess costs generated in the preshipment stage of soybean, meat, wood, sesame seed and LCL exports in 2005.

TABLE 4.3. Other excess costs generated in the Preshipment Stage for the products and corridors studied (2005)

Corridor	Merchandise loss	%	Delays delivering container/ truck	%	Delays/ excess costs due to health cert.	%	Gratuities	%	Total
	US$ in 2005		US$ in 2005				US$ in 2005		
River-sea soybean exports	4,800,848	94%	0	0%	0	0%	0	0%	4,800,848
Land soybean exports	127,203	3%	0	0%	0	0%	0	0%	127,203
River-sea frozen meat exports	0	0%	1,201,418	72%	4,271,707	59%	0	0%	1,201,418
Land refrigerated meat exports	0	0%	276,602	17%	0	0%	0	0%	276,602
River-sea wood exports	0	0%	88,649	5%	2,836,773	39%	351,760	100%	440,409
River-sea sesame seed exports	157,500	3%	94,500	6%	114,490	2%	0	0%	252,000
River-sea agrochemical imports	0	0%	0	0%	0	0%	0	0%	0
River-sea LCL exports	0	0%	0	0%	9,981	0%	0	0%	0
River-sea LCL imports	0	0%	0	0%	0	0%	0	0%	0
	5,085,551	100%	1,661,169	100%	7,232,951	100%	351,760	100%	14,331,431

Source: CARANA Corporation Analysis, 2006

The total amount of these four types of excess costs in 2005 for the products studied represented a loss of US$ 14,331,431 for the Paraguayan economy.

The overall excess costs incurred in the preshipment stage of the products studied on the basis of their import and export volumes in 2005 therefore represented a loss of some US$ 30,946,767 for the Paraguayan economy.

TABLE 4.4. Summary of the excess costs identified in the Preshipment Stage for the product and corridors studied, 2005

Stage in Pre shipment	Excess Costs
	US$ in 2005
Delays caused by poor roads	7,449,497
Profit losses	9,165,839
Merchandise loss	5,085,551
Delays in container-truck	1,661,169
Delays and excess costs in	7,232,951
Gratuities	351,760
	30,946,767

Source: CARANA Corporation, Analysis, 2006

4.B.2 Land transportation

The land transportation stage only contemplates transport from the plant to the final destination in the case of the selected land corridors (such as the land corridor for refrigerated meat to Chile and for soybeans to Brazil) and to the port in the case of sea or river corridors. The internal transportation stage (i.e. overland transportation from the farm to the processing plant) is included in the preshipment stage.

The inclusion of internal transport in the preshipment stage means that, at first sight, of the nine corridors selected, only two are inefficient as far as land transportation is concerned: the Ciudad del Este – Cascabel (Brazil) corridor and the Asunción- Santiago de Chile corridor. It should be noted, however, that the other corridors studied reveal inefficiencies in land transportation as well, but that these are included in the excess costs for road infrastructure deficiencies in the preshipment phase.

Bearing this in mind, **Table 4.5** shows that, in 2005, some US$ 2,897,944 of excess costs were generated in the overland transportation of soybean exports and US$ 1,777,488 in the overland transportation of refrigerated meat exports. These excess costs are generated by delays and costs incurred from the moment the cargo leaves the plant until it reaches its final destination abroad (Brazil or Chile) and are caused by border crossing procedures and delays at border crossings, which generate profit losses and inventory costs.

TABLE 4.5. Summary of the excess costs identified in the Land Transportation stage for the products and corridors studied (2005)

Stage	Excess cost for soybeans	%	Excess cost for chilled meat	%	Total
	US$ in 2005		US$ in 2005		US$ in 2005
Border Crossing	741,223	26%	42,554	2%	783,777
Delays at Border	190,805	7%	1,244,709	70%	1,435,515
Profit losses due to delays	1,721,551	59%	490,224	28%	2,211,775
Truck parking at the border	244,365	8%	0	0%	244,365
	2,897,944	**100%**	**1,777,488**	**100%**	**4,675,432**

Source: CARANA Corporation Analysis, 2006

Refrigerated meat shipments are delayed an estimated four days at the Paraguay-Argentina border crossing, and twelve hours at the Argentina-Chile border. The excess costs in land transportation, according to the volumes of refrigerated meat and soybean exported and on the basis of an estimated border crossing cost of US$ 50 per truck plus the costs of delays, totaled US$ 4,675,432 in 2005.

Thanks to the availability of macro-level data for the volumes of goods crossing the borders of Brazil, Paraguay and Argentina, the excess costs at the macro level could be calculated.

According to ECLAC figures for 2000, three million tons of goods were shipped across the borders of Paraguay-Brazil-Argentina-Uruguay. On the basis of an average cargo capacity of 20 tons per truck, this means that over 150,500 trucks were in use in 2000.

TABLE 4.6. Values and volumes in Land Transportation in the Paraguayan economy (2000)

Origin - Destination	FOB	Volume	US$	Delay	Load/Vehicle	Vehicles
	US$	tons	tons	hours	ton	units
Paraguay - Argentina	67,596,200	271,129	249.37	12	20	13,556
Paraguay - Brazil	320,898,300	1,461,162	219.62	12	20	73,058
Paraguay - Uruguay	25,752,100	63,904	402.98	24	20	3,195
Argentina - Paraguay	327,601,300	422,284	775.78	12	20	21,114
Brazil - Paraguay	666,916,100	761,478	875.82	12	20	38,074
Uruguay - Paraguay	17,928,900	30,141	594.83	24	20	1,507
Total	**1,426,692,900**	**3,010,098**	**3,118**			**150,504**

Source: CARANA Corporation Analysis, 2006, ECLAC, 2000

The data provided by Customs in **Table 4.7** shows that 3.9 million tons of imports and exports were mobilized in 2005-2006, with a total FOB value of US$ 2.2 million.

TABLE 4.7. Values and volumes in Land Transportation of Paraguayan imports and exports (2005-2006)

Traffic	FOB	Volume	US$	Delay	Load/ vehicle	Vehicles
	US$	tons	per ton	hours	tons	units
Imports	1,754,752,500	2,343,381	748.81	12	20	117,169
Exports	461,235,347	1,586,977	290.64	12	20	79,349
Total	**2,215,987,847**	**3,930,358**	**1,039**			**196,518**

Source: CARANA Corporation Analysis, 2006, Customs, 2005-2006

Assuming profit losses of US$ 6 per hour, average miscellaneous expenses and dispatch expenses per truck of US$ 40 and US$ 50, each, and inventory costs of 0.5% of FOB value per day, excess costs in land transportation at the macro level stand at US$ 37.7 million, with profit losses accounting for the largest portion of these costs.

TABLE 4.8. Summary of excess costs in Land Transportation, 2005

Excess costs in land transportation	Macro level
	US$ 2005
Profit losses	14,149.29
Inventory costs	5,539,970
Miscellaneous expenses	7,860,717
Customs brokerage expenses	9,825,896
	37,375,872

Source: CARANA Corporation Analysis, 2006

4.B.3 Port

The excess costs incurred during the "Port" stage of shipment are incurred exclusively on the river and sea corridors, except in the case of imported LCL cargo which, under the assumptions used in this study, did not incur any excess costs in the port stage.

An analysis of other products shows that they are all affected by delays accessing ports, which accounts for a significant portion of the profit losses that often constitute excess costs.

The excess costs incurred by port delays and corresponding profit losses reached US$ 7,409,847 in 2005: of which US$ 960,239 were generated by the former and US$ 6,449,608 by the latter, as shown in **Table 4.9** below.

Of the nine river and sea corridors studied, the soybean corridor suffers the highest level of port-related excess costs: accounting for 69% of all excess costs due to port delays, and 96% of the corresponding profit losses. This study found that soybean cargo on average faces an eleven hour delay in accessing ports, which, in addition to increasing inventory costs, generates profit losses of around US$ 2.44 per ton. Given that 2,526,762 tons of soybeans were exported in 2005, this means that port excess costs for soybeans reached US$ 6,836,646 that year.

The calculation of the excess costs caused by port delays for the other products were based on three hour delays and profit losses of US$ 6 per hour.

TABLE 4.9. Excess costs identified in the Port Stage for the products and corridors studied (2005)

Corridor	Delay Accessing Port	%	Resulting Profit Loss	%	Delays Loading Container	Total
	US$ in 2005		US$ in 2005		US$ in 2005	US$ in 2005
River-sea soybean exports	660,117	69%	6,176,529	96%	0	6,836,646
Land soybean exports	0	0%	0	0%	0	0
River-sea frozen meat exports	133,491	14%	59,147	1%	0	192,638
Land refrigerated meat exports	0	0%	0	0%	0	0
River-sea wood exports	88,649	9%	102,124	2%	0	190,773
River-sea sesame seed exports	11,813	1%	21,808	0%	0	33,620
River-sea agrochemical imports	41,170	4%	0	0%	0	41,170
River-sea LCL exports	25,000	3%	90,000	1%	1,400,000	1,515,000
River-sea LCL imports	0	0%	0	0%	0	0
	960,239	**100%**	**6,449,608**	**100%**	**1,400,000**	**8,809,847**

Source: CARANA Corporation Analysis, 2006

US$ 7.4 million of excess costs were generated by port access-related excess costs in six of the nine corridors studied and, according to the information obtained from the SOFIA System, from January 2005 to May 2006, 59% of imports and exports were transported by water. Considering that delays in port access are common in all products and ports throughout the region, the excess costs generated at the macro level can therefore be assumed to be much higher than US$ 7.4 million.

Excess costs in the corridors studied are also generated by delays in the loading of export LCL containers. In 2005, 10,000 m3 of LCL cargo was exported, and excess costs in this sector reached US$ 1,400,000. According to the 2005 export/import volumes of the selected products, excess costs during the "port" stage, which consist of the costs incurred by port-access delays, profit losses, and delays in container loading, reached US$ 8,809,847.

The study shows that around 40,000 containers were transported in 2005. Assuming a three-hour delay, a cost of US$ 6 per hour in lost profits, an average FOB value of US$ 20,000 per container, and a daily inventory cost equivalent to 0.5% of FOB value, this means that port-related excess costs for containerized cargo are US$ 12,000,000.

If this figure is added to the port-related excess costs calculated for soybean shipments, macro-level port-related excess costs stand at US$ 19,556,646.

TABLE 4.10. Excess costs calculated in the Port Stage for containerized cargo (2005)

Port Related Excess Costs	Delay Accessing Port	%	Resulting Profit Loss	%	Total
	US$ in 2005		US$ in 2005		US$ in 2005
River-sea soybean exports	660,117	5%	6,176,529	90%	6,836,646
Macro-level containerized cargo	12,000,000	95%	720,000	10%	12,720,000
	12,660,117	**100%**	**6,896,529**	**100%**	**19,556,646**

Source: CARANA Corporation Analysis, 2006

4.B.4 Customs

The different types of excess costs encountered in the 'Customs' stage of import and export operations are described below:

4.B.4.1 Miscellaneous Expenses

This expense is often recorded under customs activities without the service in question being specified.

It is an export-related expense and, according to the survey carried out, "miscellaneous expenses" refers to the gratuities given supposedly to accelerate export procedures, when in fact no service is provided and these gratuities merely serve as an "incentive" to public officials.

The analysis performed on selected exports in 2005 revealed that US$ 571,131 of such expenses were incurred. The figure at the macro level is certainly much higher given that all import and export operations probably involve "gratuities" and that many of these excess costs are never reported by the parties involved. In short, no reliable figures on 'gratuities' are available.

4.B.4.2 Certificates of Origin

Certificates of origin repeatedly generate excess costs in the customs process: some US$ 334,230 of excess costs were generated this way in the seven export corridors studied.

Certificates of origin are considered an excess cost because in practice they are a totally unnecessary requirement that does nothing but increase red tape and costs. In the past, certificates of origin were common, but nowadays they are no longer used at the international level and in fact are contrary to the principles established by the WTO to facilitate trade. Only two countries still use this bureaucratic procedure in Latin America and the Caribbean: Paraguay and the Dominican Republic.

4.B.4.3 Customs Brokerage Fees

According to the survey performed in Paraguay, excess costs in customs brokerage fees were detected in some of the nine corridors studied as they were higher than the regional average in all cases, except soybeans. On the basis of this analysis and the 2005 import and export volumes of six of the corridors studied, US$ 3,331,490 of excess costs were generated by customs brokerage fees.

It should be noted that the excess costs incurred by customs brokerage fees in the case of refrigerated meat shipments to Chile have only been included in the macro level excess costs analysis for the land transport stage.

4.B.4.4 The Paraguayan Free Zone Deposit Fee and the ANNP Port Fee

The Paraguayan free zone deposit fee and the port fee charged by the National Port and Shipping Administration (Adminstracion Nacional de Navegacion y Puertos -ANNP) are levied on imports and exports without any service being provided in exchange. This makes them 100% excess costs.

They currently stand at US$ 50 per shipment and US$ 16 for administrative expenses. Of the corridors studied, import LCL cargo, soybeans, agrochemicals and refrigerated meat are currently subject to these fees, and US$ 848,807 in excess costs were generated by these fees in 2005.

4.B.4.5 Transshipment Fees

Imports are subject to another excess cost, namely the transshipment charge of US$ 50 plus US$ 16 for administrative expenses. The LCL cargo and agrochemical imports in 2005 incurred US$ 273,090 of excess costs in transshipment fees, because in practice paying the transshipment fee is an unnecessary procedure in which nothing is received in return.

4.B.4.6 Delays in Merchandise Withdrawal

Agrochemicals in particular suffer excess costs generated by delays in merchandise withdrawal, and the high value of these products meant that US$ 889,940 of excess costs were incurred in 2005.

Table 4.11 below shows that total excess costs in the customs stage for the products studied reached US$ 6,248,688 in 2005, which means that these costs must be considerable at the macro level.

TABLE 4.11. Excess costs identified in the Customs Stage for the products and corridors studied (2005)

Selected Products	Excess Costs in Customs	%
Miscellaneous expenses	571,131	9%
Certificates of Origin	334,230	5%
Customs Brokerage Fees	3,331,490	53%
Paraguayan Free Zone Deposit Fee and ANNP fee	848,807	14%
Transshipment fee	273,090	4%
Delays in withdrawing merchandise	889,940	14%
	6,248,688	**100%**

Source: CARANA Corporation Analysis, 2006

The number of shipments passing through Customs between January 2005 and May 2006 were used to analyze and calculate the excess costs incurred during the customs stage at the macro level of the Paraguayan economy, and these are described below:

4.B.4.7 Registration procedures

The registration procedure is an excess cost in all nine of the corridors analyzed inasmuch as this service is provided upon payment of the information registration fee. According to the information obtained from the SOFIA System, and based on an estimated average registration fee of US$ 28, some US$ 3,041,620 in excess costs are incurred in the Paraguayan economy as a result of the obligation to pay both the registration and information registration fees.

4.B.4.8 Cargo Reservation Measures

Cargo reservation measures constitute another significant excess cost that can be calculated at the macro level. According to the survey results, and bearing in mind that port statistics are not available to the public in Paraguay, some 400,000 full containers of cargo are assumed to have been transported and some 40,000 cargo requests are assumed to have been handled in Paraguay in 2005.

Given the cargo reservation cost is US$ 5 per request plus US$ 10 in handling fees, containerized cargo incurred US$ 600,000 in excess costs in 2005.

This figure does not include the excess costs incurred by soybean exports. Given that 2.5 million tons of soybeans were exported in 2005 and that an average barge carries 1,200 tons, US$ 10,528 in excess costs were generated in sector alone in 2005. It should be pointed out that the convenience of issuing a cargo reservation certificate per barge is dubious, and the possibility of issuing a certificate per push-tug should be considered.

In the case of soybeans, cargo reservation measures generate another indirect excess cost: the inventory cost incurred due to delays bulk cargo shipments face obtaining the cargo reservation certificate.

These delays are estimated to average 48 hours, representing a cost of US$ 1.14 per ton. In other words, on the basis of the export volumes reported for 2005, cargo reservations generated US$ 2,880,509 in excess inventory costs.

The impact of cargo reservations on the economy as a whole can therefore be conservatively estimated at US$ 3,491,037.

4.B.4.9 Photocopies

The excess costs generated by photocopying expenses can also be calculated at the macro level. According to the study, the average excess cost incurred by photocopying is US$ 8 per shipment, which, on the basis on the estimated number of import and export transactions reported in 2005, represents an excess cost of US$ 858,810. The photocopying expenses reported under customs brokerage expenses often include other unofficial costs, such as 'gratuities', and are therefore considered excess costs.

4.B.4.10 Customs Inspections

The excess costs incurred in customs inspections that are charged for but not performed (and therefore are considered to be excess costs) can also be calculated at the macro level.

Customs inspections cost on average US$ 29 each. On the basis of the data provided by the SOFIA System[11], 22,331 export shipments were assumed to have been made from January to December 2005, which represents US$ 647,599 in customs inspection charges.

4.B.4.11 Consular Visa Requirements

The excess costs generated by the consular visa process for imports, which is a totally unnecessary procedure that only serves to increase costs, can also be calculated at the macro level. Like certificates of origin, consular visas are no longer required at the international level and totally contradict WTO stipulations.

According to the information obtained, consular visas cost on average US$ 80, which, given that 85,020 import operations were carried out in 2005, means that US$ 6,801,600 of excess costs were generated by consular visas.

Customs-related excess costs at the macro level therefore total US$ 14,840,666.

TABLE 4.12. Excess costs calculated in the Customs Stage at the macro level of the Paraguayan economy (2005)

Customs Requirements	Macro level Excess Costs	%
	US$ in 2005	
Registration procedures	3,041,620	20%
Cargo reservation measures	3,491,037	24%
Customs inspections	647,599	4%
Photocopies	858,810	6%
Consular visa requirements	6,801,600	46%
	14,840,666	**100%**

Source: CARANA Corporation Analysis, 2006

[11] The Sofia System provided data on the number of import and export operations carried out between January 2005 and May 2006. An estimate was made of the number of imports/exports made per month in order to calculate the total number made in 2005. This figure is thought to be highly conservative, however, because seasonal variations in exports mean that there are more shipments in some months than others.

4.B.5 Water Transportation

The water transportation stage involves a significant excess cost: a lack of depth in the rivers, which indirectly reduces the holding capacity of the cargo ships, and therefore artificially raises freight charges.

This loss in holding capacity is quantified as US$ 100 per transported TEU. Some 20,000 twenty- and forty-foot containers, in other words 60,000 filled TEUs, were transported in 2005, which loss of holding capacity accounted for excess costs of US$ 6,000,000.

Depth limitations and inadequate beaconage generate 24-hour delays on average in shipping times. The quantification of the costs generated by delays is obviously closely related to the FOB value of the cargo in question. For practical purposes, the average value of each container was calculated on the basis of the products included in this study. Given that 40,000 units were transported in 2005, and assuming an average value of US$ 20,000 per container, then US$ 4,000,000 in excess costs were generated as a result of shipping delays caused by shallow waters.

In the case of bulk shipments, specifically of soybeans, it is estimated each barge transports 200 tons less than its capacity and takes two days longer in shipping due to the current depth conditions along the river routes. Assuming that the costs incurred by shipping delays are US$ 1.14 per ton and that the costs generated by loss of cargo capacity is US$ 2.57 per ton, excess costs in water transport therefore reached US$ 9,337,897 in 2005.

According to this study, the excess costs generated by depth restrictions and inadequate beaconage reached US$ 19,377,897 in 2005. This figure, though high, is actually conservative given that only the figures for soybean exports were included in the bulk cargo calculations.

TABLA 4.13. Excess costs identified in the Water Transportation Stage for the soybean and containerized cargo sectors (2005)

Excess costs in water transportation	Macro level	%
Loss of holding capacity	12,497,388	64%
Shipping delays	6,880,509	36%
	19,377,897	**100%**

Source: CARANA Corporation Analysis, 2006

4.B.6 Collection

An analysis of the excess costs generated by late payments in the “Collection” stage shows that nine corridors together incurred US$ 4,291,192 in excess costs of this kind. If these excess costs could be quantified at the macro level, the result would most certainly be a significant amount.

TABLE 4.14. Excess costs identified in the Collection Stage for the products and corridors studied (2005)

Corridors	Excess Costs in Collection	%
	US$ in 2005	
River-sea soybean exports	1,440,254	34%
Land soybean exports	190,805	4%
River-sea frozen meat exports	1,537,815	36%
Land refrigerated meat exports	398,307	9%
River-sea wood exports	297,861	7%
River-sea sesame seed exports	66,150	2%
River-sea agrochemical imports	0	0%
River-sea LCL exports	360,000	8%
River-sea LCL imports	0	0%
	4,291,192	100%

Source: CARANA Corporation Analysis, 2006

Table 4.15 below summarizes the excess costs incurred per stage and indicates whether the results are for the economy as a whole or only for the products selected under the study.

In the case of customs inspections, the average shipment for the selected products was considered to be three containers and three trucks, as applicable.

TABLE 4.15. Summary of the excess costs identified for the products studied and at the macro level of the Paraguayan economy (2005)

Excess Costs in Preshipment	Products	%	Macro level	Total
	US$ 2005			US$ 2005
Delays caused by poor roads	16,615,336	54%	n/a	16,615,336
Merchandise losses	5,085,551	16%	n/a	5,085,551
Delays in truck-container receipt/delivery	1,661,169	5%	n/a	1,661,169
Delays and excess costs in health certificates	7,232,951	23%	n/a	7,232,951
Gratuities	351,760	1%	n/a	351,760
	30,946,767	**42%**	**-**	**30,946,767**

Excess Costs in Land Transportation	Products	%	Macro level	Total
	US$ 2005			US$ 2005
Border crossing procedures	783,777	16%	n/a	783,777
Delays at borders	1,435,515	30%	5,539,970	5,539,970
Profit losses	2,211,775	46%	14,149,290	14,149,290
Truck parking at borders	244.365	5%	-	244.365
Miscellaneous expenses	n/a	0%	7.860.717	7.860.717
Customs brokerage expenses	170.217	0%	9.825.896	9.825.896
	4,845,649	**7%**	**37,375,872**	**38,404,015**

Excess Costs in Port	Products	%	Macro level	Total
	US$ 2005			US$ 2005
Costs related to delays in port-access	7.409.847	84%	19.556.645	19.556.645
Delays in container loading	1.400.000	16%	n/a	1.400.000
	8,809,847	**12%**	**19,556,645**	**20,956,645**

Excess Costs in Customs	Products	%	Macro level	Total
	US$ 2005			US$ 2005
Miscellaneous expenses	571.131	5%	n/a	571.131
Certificates of Origin	334,230	3%	n/a	334,230
Customs Brokerage Fees	3,331,490	30%	n/a	3,331,490
Paraguayan Duty Free Deposit Fee and ANNP fee	848,807	8%	n/a	848,807
Transshipment fee	273,090	2%	n/a	273,090
Delays in retrieving merchandise	889,940	8%	n/a	889,940
Registration procedures	982,001	9%	3,041,620	3,041,620
Cargo reservation measures	2,994,366	27%	3,491,037	3,491,037
Customs inspection expenses	265,478	2%	647,599	647,599
Photocopies	266,113	2%	858,810	858,810
Consular visa requirements	442,663	4%	6,801,600	6,801,600
	11,199,309	**15%**	**14,840,666**	**21,089,354**

Excess Costs in Water Transportation	Products	%	Macro level	Total
	US$ 2005			US$ 2005
Costs incurred by loss of holding capacity	8.741.707	63%	12.497.388	12.497.388
Inventory costs in shipping days lost	5.134.688	37%	6.880.508	6.880.508
	13,876,395	**19%**	**19,377,896**	**19,377,896**

Excess Costs in Collection	Products	%	Macro level	Total
	US$ 2005			US$ 2005
Delays in collections	4,291,192	100%	n/a	4,291,192
	4,291,192	**6%**	**-**	**4,291,192**

Total Excess Costs	73,969,160	100%	100,605,030	135,065,869

Source: CARANA Corporation Analysis, 2006

As shown in **Table 4.15** above, **the excess costs identified in the six stages total US$ 144,519,820, which is equivalent to 1.88% of GDP in 2005**[12]**.** This figure is conservative, however, considering that only some of the excess costs in the nine selected corridors could be calculated at the macro level, which means that other products and corridors, which probably suffer similar or other excess costs, were not taken into account.

A simple attempt to estimate total excess costs at the macro level was made by calculating the average ratio of excess costs to FOB value for the nine corridors studied. This ratio was 6.6% (see **Table 4.16** below).

Given that the FOB value of total trade was US$ 4,940,251,132, total excess costs in the Paraguayan economy can be estimated to have been US$ 326,605,491, (4.26% of GDP in 2005).

TABLE 4.16. Excess costs/FOB value ratio for the products and corridors studied (2005)

Corridor	Excess costs/ FOB
River-sea soybean exports	6%
Land soybean exports	7%
River-sea frozen meat exports	7%
Land refrigerated meat exports	5%
River-sea wood exports	11%
River-sea sesame seed exports	7%
River agrochemical imports	3%
River-sea LCL exports	10%
River-sea LCL imports	5%
Average excess cost/FOB	**6.61%**

Source: CARANA Corporation Analysis, 2006

4.B.7 The cost of being landlocked

Quantifying the impact of excess costs can also help estimate the proportion of these excess costs that can be attributed to Paraguay's landlocked status. First, a distinction needs to be drawn between the excess costs that can be attributed specifically to the country's landlocked situation and those which can be attributed to internal or inherent factors that would still affect excess costs even if Paraguay had the same regulations, infrastructure, facilities, etc. but was located on a seacoast. In this respect, the following distinctions were made:

- All the **preshipment** excess costs should be attributed to internal factors that are not attributable to the country's landlocked situation.
- All the **land transportation** excess costs should also be considered internal factors. This is because there is no difference in the excess costs incurred by an importer or exporter in Paraguay and an importer or exporter that is located as far inland in a neighboring country with a seacoast as Paraguay is from the coast.

[12] GDP in 2005 was US$ 7,672 million, according to the Central Bank of Paraguay

- **Customs**-related excess costs should include all the excess costs generated in cross border procedures for overland shipments that are heading towards ports in neighboring countries for subsequent shipment by boat. These cross-border expenses include: US$ 50 in miscellaneous expenses; US$ 12 in miscellaneous road expenses; US$ 50 in customs brokerage expenses at the border; US$ 50 in customs handling expenses for the vehicle, and inventory costs and profit losses caused by 12 hour delays. These excess cost calculations should also consider the extraordinary impact that the 96-hour delays suffered by certain kinds of freight (such as refrigerated meat) has on inventory costs and profit losses.

- All **port**-related excess costs should be considered attributable to internal factors. The Paraguayan free zone deposit fee has been designated an internally generated excess cost because it forms part of the country's tax collection system and is not affected by its landlocked status.

- The inventory costs, profit losses and freight excess costs incurred in **water transportation** due to insufficient dredging and beaconage along the waterway need to be duly attributed to internal and external factors.

- Finally**, collection**-related excess costs are dependent on internal factors that should not be taken into account.

The excess costs stemming from the country's landlocked position are set forth in **Table 4.18** and summarized in **Table 4.17** below. A study of the impact of the country's landlocked position on total excess costs at the macro level shows that 47% of excess costs can be attributed to this factor, and that of these, 77% are caused by internal factors and 23% by external factors.

TABLA 4.17. Estimated excess costs of Paraguay's landlocked status (2005)

	US$	%
Total excess costs caused by internal factors	$ 104,241,698	77%
Total excess costs caused by external factors	$ 30,824,169	23%
Impact of landlocked status on excess costs	**$ 62,944,774**	**47%**
Impact of landlocked status caused by internal factors	**$ 38,758,652**	**62%**
Impact of landlocked status caused by external factors	$ 23,903,426	38%

Source: CARANA Corporation Analysis, 2006

TABLA 4.18. Estimated excess costs caused by Paraguay's landlocked status (2005)

IDENTIFIED EXCESS COSTS		CAUSED BY FACTORS THAT ARE 'INTERNAL' OR 'EXTERNAL' TO THE COUNTRY				ESTIMATED EXCESS COSTS CAUSED BY LANDLOCKED STATUS	
DESCRIPTION	ESTIMATED TOTAL IMPACT	INTERNAL FACTOR	EXTERNAL FACTOR	INTERNAL FACTOR	EXTERNAL FACTOR	ESTIMATED TOTAL IMPACTO	CRITERION APPLIED
	(US$)	(%)	(%)	(US$)	(US$)	(US$)	
Border crossings	38,404,015	50%	50%	19,202,007	19,202,007	38,404,015	Dependent on good cross-border relations.
Delays in port access	19,556,645	100%	0%	19,556,645	0	0	
Insufficient dredging and beaconage	19,377,896	67%	33%	12,918,596	6,459,298	19,377,896	Dependent on neighboring countries' infrastructure.
Delays due to poor roads	16,615,336	100%	0%	16,615,336	0	0	
Delays in obtaining health certificates	7,232,951	35%	65%	2,531,533	4,701,418	4,701,418	Dependent on neighboring countries' administrative policies .
Consular visa requirements	6,801,600	100%	0%	6,801,600	0	0	
Cargo reservation law	3,491,037	100%	0%	3,491,037	0	0	
Merchandise loss during preshipment	5,085,551	100%	0%	5,085,551	0	0	
Delay in collections	4,291,192	100%	0%	4,291,192	0	0	
Customs brokerage expenses	3,331,490	100%	0%	3,331,490	0	0	
Registration procedures	3,041,620	100%	0%	3,041,620	0	0	
Delays in receipt/delivery in port	1,661,169	100%	0%	1,661,169	0	0	
Delays in LCL container loading	1,400,000	100%	0%	1,400,000	0	0	
Delays in retrieving merchandise	889,940	100%	0%	889,940	0	0	
Photocopies	858,810	100%	0%	858,810	0	0	
Paraguayan Free Zone Deposit Fee	848,807	100%	0%	848,807	0	0	
Customs inspections	647,599	100%	0%	647,599	0	0	
"Miscellaneous expenses"	571,131	50%	50%	285,566	285,566	285,566	Dependent on administrative policies of neighboring countries.
Gratuities	351,760	50%	50%	175,880	175,880	175,880	Dependenct on administrative policies of neighboring countries.
Certificates of origin	334,230	100%	0%	334,230	0	0	
Customs transshipment fee	273,090	100%	0%	273,090	0	0	
TOTAL IDENTIFIED EXCESS COSTS	**135,065,869**			**104,241,698**	**30,824,169**	**62,944,774**	
				77%	**23%**	**47%**	

Source: CARANA Corporation Analysis, 2006

4.C CONCLUSIONS AND RECOMMENDATIONS

4.C.1 During preshipment

As the macroanalysis performed in the previous section shows, for the products studied, the excess costs in the preshipment stage alone are US$ 30,946,767 per annum. The conclusions and recommendations for each of the components of the preshipment stage are detailed below.

4.C.1.1 Road Infrastructure

The exports analysis reveals significant delay problems are caused by poor roads in rural areas. Delays in meat transportation, for example, average 48 hours in the preshipment stage due to the inadequate road network. This raises inventory costs (which directly affect exporters) and generates profit losses (those that affect the overland transporter but are transferred to the exporter).

On the basis of the surveys performed as well as the aforementioned parameters, and by applying the methodology used in Hummels' work[13], the inventory costs caused by export delays have been calculated as 0.3% of FOB value for raw materials (soybeans and sesame seeds), 0.5% for meat and wood, and 0.8% for manufactured goods (IT products). The profit losses incurred by each truckload are estimated to be US$ 6 per hour of delay.

It is therefore recommended that special attention be paid to improving and developing the road infrastructure in rural areas. The quantification of the impact of deficiencies in this respect, such as the one performed here, can be used to justify the need to carry out the corresponding investments and facilitate the adequate allocation of resources to road projects.

Excess costs caused by deficiencies in road infrastructure: US$ 16.6 million

4.C.1.2 The under utilization of preshipment practices

Problems regarding quality and training in freight packing and consolidation have been detected. As a result, merchandise gets damaged, and commercialization and security problems abound.

It is recommended that producers and exporters receive training in techniques and practices that reduce the loss and damage of merchandise during the freight packing and consolidation processes.

Excess costs caused by merchandise losses during the preshipment stage: US$ 5.1 million

4.C.1.3 The shortage of refrigerated storage

There is widespread shortage of refrigerated warehouses in the preshipment stage. Few are available for meat and almost none are available for fruit.

[13] See "Tiempo Como Barrera al Comercio" (Time as a trade barrier), page 45

It is recommended that an inventory be carried out of private-sector refrigerated warehouse capacity in Paraguay together with a projection of future needs.

4.C.1.4 The lack of internal cargo terminals

There is a shortage of internal cargo terminals in the preshipment stage. The possibility of developing a network of internal cargo terminals should be analyzed together with the recommendations made regarding refrigerated storage (above) and logistics parks (below). An internal cargo terminal is a step towards creating an internal logistics park, which generates value-added activities and matches the supply and demand for transport services and warehousing, for both international and national trade. Developing a logistics park to take over the warehousing and distribution activities currently carried out by industrialists and producers will not be a simple undertaking, but it is feasible.

It is therefore recommended that a feasibility study be conducted first to identify the possible locations of these kinds of terminals and second to determine their economic-financial feasibility, as well as the legal framework that would be required.

4.C.1.5 The lack of logistics park infrastructure

The development of port-related logistics parks has still not been contemplated in Paraguay. Paraguay is a landlocked country but it has river access to the sea, and the development of logistics parks, in addition to playing a key role in increasing the competitiveness of the country's foreign trade, could enable it to export services to places in neighboring countries that do not have river access.

The establishment of logistics parks, which in practice are similar to domestic cargo terminals but situated next to ports, could constitute a key element for developing logistics services and value-added activities. Given Paraguay's geographic location and features, the development of logistics parks is quite feasible because they could provide services to neighboring countries in addition to handling local import and export traffic.

There are currently no such facilities in Paraguay, and knowledge of how they operate is scarce. The first recommendation is therefore to organize activities aimed at disseminating information on logistics parks. Second, the legal feasibility of operating a logistics park in Paraguay should be analyzed with a view to identifying any legal limitations or legislation that would need to be modified.

4.C.1.6 Health Certificates

Difficulties in obtaining certifications of quality for meat exports to Russia have been detected in the pre-shipment stage. This process is currently carried out by an inspector who lives in Buenos Aires. Given that the inspector has to come to Paraguay to perform the inspections, significant delays in shipping occur, which considerably raises the inventory costs for these products to US$ 4,271,707. The macro-level analysis of excess costs in other products shows that the delays in obtaining certification represent US$ 7,232,951 in excess costs.

Given the significance of meat exports to Paraguay's economy, the CNCSP would be justified in taking the initiative to approach the embassy of the Russian Federation to negotiate the permanent presence of an inspector in Asuncion and thus eliminate the delays and excess costs caused by the certification process.

Excess costs caused by delays in obtaining health certificates: US$ 7.2 million

4.C.2 Land Transportation

The market price for land transportation services in Paraguay during the course of the study was on average US$ 0.70/Km. Given an average cargo of 24 tons per truck, the reference market price is US$ 0.029 per t/km. These prices vary by season and corridor.

4.C.2.1 Cross-border river transshipments

Itineraries in regional overland trade are often longer than necessary due to a shortage of bridges. While there are many river crossing services in Paraguay, few can handle commercial trucks.

This shortage of river crossings is not only a problem in Paraguay, but for practically all the countries of the Waterway. Some services have been discontinued, and the only alternative for establishing border crossings for overland transport under consideration at the moment are bridges, despite the fact that establishing a ferry or transfer service would be much more economical.

It is recommended that a legal and economic-financial feasibility study be performed to promote the development of Roll on/Roll off (Ro Ro) docks and new cross border river transshipment services either through concessions or a permit system.

4.C.2.2 Combined land-river transportation

There is little combined Ro Ro/truck transport in the region, including Paraguay, for short, medium or long distances. Such combinations would cut the delays caused by border crossings between Ciudad del Este and El Dorado, for example, by three days. Comparative advantages could be found in many other routes as well, such as Asunción – Rosario (Argentina), Asunción - Buenos Aires (Argentina), Asunción – Puerto Aguirre (Chile), or even part of the stretch Asunción – Santiago (Chile).

Substituting part of a long-distance overland transportation route with water transportation has environmental benefits as well as economic ones. Obviously, several matters would need to be resolved and certain conditions met. First, the regulatory framework would need to be adjusted. Second, loading and unloading costs would need to be reduced to a minimum. Third, current customs requirements that increase red tape and costs, making the operation unfeasible, would need to be revised.

It is recommended that a study be conducted to identify viable alternatives and determine the economic-financial and legal feasibility of developing combined truck and water transportation for short, medium and long distances. This study should include the legal viability and the cost of the legal transactions involved.

4.C.2.3 ANNP charges for border services

Under current legislation in Paraguay, land transportation services pay port fees at border crossings. This measure is highly inconvenient and is restricted by international norms and practices inasmuch as no service is provided in return for payment of the fees. It is also inadvisable given that it generates a crossed subsidy between two modes of transport.

It is recommended that this charge be eliminated inasmuch as, in the consultants' opinion, no real service is provided and it generates a crossed subsidy.

4.C.2.4 Delays at border crossings

The border crossings between Paraguay and Bolivia and Brazil lack the necessary infrastructure systems for cross-border transportation to be operationally efficient. The bilateral and multilateral agreements on customs and sanitation matters also undermine the efficiency of border crossings. Customs and border procedures for passengers, private vehicles and cargo transport are all handled at the same crossing, which complicates operations enormously, and the available infrastructure is currently inadequate.

As far as regulatory matters are concerned, customs regulations in Paraguay and its neighbors are highly complex, and the inefficiency in the systems on both sides of the border is readily apparent at the border crossings. The customs and sanitation procedures at border crossings are excessively bureaucratic and involve a considerable amount of paper work. The almost obligatory presence of a customs broker to carry out the necessary procedures for getting merchandise through customs and of another customs broker to sort out the truck crossing makes the situation even more complicated.

All these factors generate a high level of informality in border procedures, as well as a lack of predictability and transparency, which, according to the analysis of the macro-level results, accounts for annual losses of over US$ 38 million in Paraguay's foreign trade.

This issue is one of the most complex to resolve because it requires the same level of commitment to be displayed by all the countries involved. Although the subject has not been studied in depth, the remedies proposed so far have not solved the problem. Successful interventions in other regions should be analyzed to see if those solutions can be applied to in this context. The complexity of the subject requires further analysis to be carried out to weigh the annual impact of these inefficiencies (US$ 38.4 million), improve their measurement, and analyze their evolution. It is recommended the Chamber of Commerce and Services start measuring the delays and costs involved in border crossings on a regular basis and publish and monitor the results with a view to coming up with concrete proposals for improving the situation in the future.

Excess costs caused by inefficient border crossing procedures: US$ 38.4 million

4.C.2.5 Land transportation cost analysis

The situation in the land transportation market is chaotic: freight charges vary considerably; there is a total lack of formality in the sector; prices change sharply according to season; there are deficits and surpluses in different segments, etc.

The design of a mechanism to calculate freight charges could help improve negotiations between transporters and users. It is recommended that a toolkit for calculating overland freight charges be developed to facilitate negotiations between cargo suppliers and transporters and to make these processes more open. This toolkit should consider the analysis of alternate types of transport and corridors, taking possible delays into account.

4.C.3 Port

Paraguay has completely overhauled its port infrastructure since the beginning of the 1990s. Considerable improvements have been achieved with regard to infrastructure, service quality and competition.

A critical analysis shows, however, that progress still needs to be made in some aspects of port infrastructure, regulation and operations to ensure continued sustainable development.

4.C.3.1 Loading and unloading equipment

Loading and unloading equipment is one of the aspects of port infrastructure requiring attention. Most of the existing equipment (mainly construction cranes that have been adapted to port operations) has been and continues to be effective but, according to the authors of the study, is now obsolete, is prone to breakdown and causes delays because of its slow cargo moving capacity.

Considering that the current estimated volume of cargo is 60,000 TEUs, the size of the market already justifies initiating a gradual upgrading of loading and unloading equipment in the country's ports. Given the economies of scale, it is probably not necessary to invest in Gantry or mobile cranes, but investing in fixed cranes and used Gantry cranes would be justified.

4.C.3.2 Dockyard equipment

Reach stackers or front lift trucks are used in almost all the storage bays of the container terminals, for dockyard operations, delivering cargo to and from vessels, and receiving and delivering containers. Given the current economies of scale, this equipment is inefficient and results in the yards being under utilized.

Considering the current volumes of containerized traffic in Paraguay, it is recommended that ports start to gradually switch from using reach stackers and front lift trucks to using wheel and rail-mounted transtainers. This would increase the use of the dockyards and improve the quality of port services.

4.C.3.3 Port tariffs

The current practice in Paraguay of levying ad valorem port tariffs on importers and exporters has been practically eliminated elsewhere in the world. This practice is neither fair nor transparent and is contrary to modern international tariff practices.

Moreover, the port tariffs charged for each imported container at the port terminals include a thirty-day grace period, which is extremely long compared with international practices. Normally, port tariffs levied on containers are divided into those charged for moving cargo and those charged for storing cargo; there is grace period for stays of three to five days, and penalties for

importers who leave their cargo in the terminals longer. Ports usually reserve the right to transfer containers that remain after 30 days to a warehouse outside the port at the importers expense.

If such changes were implemented in the port tariff structure in Paraguay, the turnover of containers would be much higher and port capacity would significantly increase.

The structure of the port tariffs applied to containerized and general cargo in Paraguay, locally known as the "tasa" (rate), should be changed to a tariff structure that is not based on the value of the merchandise. The tariffs do not need to be standardized, as they are each port's prerogative, but their structure does. These tariffs should consider a grace period of only five days and then charge an incremental storage fee for up to 30 days, after which the cargo should be stored off site at the port's discretion.

4.C.3.4 Information Technology

There has been little computer and software development in the port terminals. Many of the computer systems were not set up by technical experts and, although they can handle data fairly well, they are not readily compatible with the systems used by shipping companies and port users.

There is no data exchange between ports and the transportation sector. The issue of IT in customs administration is discussed in another section of this document.

Considering that document transaction costs account for approximately 7% of operations costs in international trade, lowering this percentage through more efficient systems and infrastructure would boost competitiveness and represent considerable savings.

Each port is a vital nodule in a complex logistics chain that connects importers at one end with exporters at the other and facilitates the permanent expansion of world trade.

Traditionally, the weightiest factors in determining a port's competitiveness were related to its infrastructure: loading, unloading, and warehousing facilities, road access, safety, wharves, etc. Historically, these were therefore the elements that consumed most of the investments aimed at reducing costs and delivery times and improving a port's standing.

Nowadays, more attention needs to be paid to info-structures, in other words, a port's capacity to process information on international trade flows, so that the handling of information becomes a promoter and not an obstacle to trade. In Paraguay, however, it is still common to see a truck arrive at a port and not be able to load or unload because the documents (bills of lading, invoices, gate passes, etc.) have not arrived, which creates delays throughout the whole logistics chain.

In addition to documentation problems, there is the invisible cost attributable to the bureaucratic nature of the system that "trickles down" through the economic agents involved and is ultimately paid for by the final consumer and/or incurred as a loss in profits by the exporter.

Many developed countries are gradually setting up "port community systems", which use information systems that link up all the members of a logistics community to optimize the exchange of required documentation, reduce the volume of data that has to be fed into the

various systems, and finally, perfect the monitoring of all operations up to their completion when the corresponding funds have been duly mobilized. These community systems are therefore set up like e-commerce platforms.

The most important ports in the world have taken advantage of the latest developments in information technology to reduce document handling costs, as well as shipping times, and have optimized the follow-up processes of transactions for final users (importers and exporters), as well as all other agents involved in the process, including the pertinent regulatory agencies. This has been achieved thanks to coordinated efforts of all the players in the logistics chain.

Detailed surveys in the region have identified all the exchanges of documents related to imports, exports and ship movements. The port of Buenos Aires, for example, is known to have processed an estimated 18,500,000 documents in 2000 in relation to container operations.

If all the documents involved in foreign trade and all the issuers and receivers of those documents are taken into account, this means that on average 18.5 documents are processed for each TEU shipped.

Given that in Paraguay, some 40,000 containers of cargo are imported and exported each year, and that the cost of processing each document (including their issue, associated costs and delivery) is US$ 10, annual spending on documentation is estimated to be US$ 7.4 million.

The implementation of a system that prevents duplication and significantly lowers the handling of physical documents could in theory produce savings of around 70%, which would represent potential direct savings of over US$ 5 million per annum.

This figure does not include the potential indirect savings associated with increased reliability and efficiency in port processes, which would reduce the delays, inventory costs and profit losses generated by port equipment and facilities and increase control capacity, etc.

It is recommended that port terminals, especially those that handle general cargo and containers, upgrade their operational information systems to international standards so they can establish better connections with sea freight agencies and shipping companies.

It is recommended that an IT system be developed for the exchange of data among the port community with a view to reducing the red tape in the sector. This recommendation should be promoted and administrated through a joint public-private venture and it is not recommended that use of the system be compulsory.

4.C.3.5 Port statistics

Paraguay is currently the only country in the world not to publish port statistics. The only port statistics that are published are those issued by the ANNP, and considering that these only cover approximately 15% of the volume of trade, the information is insufficient to accurately assess the size of the market. This situation deters investors because port statistics are one of the key elements used for evaluating markets. It also hurts the country's image abroad because failure to produce statistics is viewed by the rest of the world as a lack of transparency.

It is recommended that the CNCSP draw up a design for port statistics that is compatible with international ones and that it propose that port statistics be compiled, processed and publicly disseminated either through the government or the CNCSP itself.

4.C.3.6 Lack of coordination between receipt and delivery

The costs generated by the lack of coordination between the receipt and delivery of merchandise in the country's ports due to a similar lack of coordination between port terminals, users and shipping companies one the one hand, and customs bureaucracy on the other, has the following negative effects on the logistics chain:

1. Excess costs for the exporter or importer incurred through the customs broker who has to carry out a series of extra procedures.
2. A loss of profit for the overland transporter whose vehicle is delayed in the pick-up or delivery of cargo.
3. An additional cost for the port terminal because it has to have extra large parking facilities.
4. An extra cost in security, because the truck often has to wait to enter the port.
5. A negative impact on town-port relations that affects the area around the terminal.

The delays in the receipt and delivery of empty and full containers is not causing severe holdups at the moment in Paraguay, but the accumulated delays in port access routes, which average three hours, are having a negative economic impact in terms of increased inventory costs and profit losses.

It is recommended that the CNCSP analyze alternate mechanisms to coordinate the receipt and delivery of containerized cargo, as well as the implementation of such mechanisms. It is also recommended that the delays caused by unnecessary customs procedures be identified and the transactions in question eliminated.

Excess costs caused by delays in accessing ports due to lack of coordination: US$ 23.5 million

4.C.4 Customs

4.C.4.1 Electronic seals

Under Resolution No. 301 of September 9, 2005, Paraguayan Customs imposed the use of electronic seals with tracking systems. This requirement is applicable to all cargo destined for the Republic of Paraguay that is transported by land or river.

According to the authors of the study, the validity of this obligation is dubious on technical grounds given that one electronic sealing device per vessel would suffice and the installation of electronic locks can seriously affect the efficiency of cargo operations in transshipment ports and hamper cargo stowage and unloading, which drives up the costs of these activities. In addition to operational problems, the survey shows that this requirement may also generate legal problems regarding the scope of the application of Paraguayan customs legislation when it possibly demands compliance in other jurisdictions.

As far as the application of these mechanisms to the transshipment of containers by river, the electronic positioning of ships is regulated in Paraguay by Law 2367 of March 6, 2004, which adopts the "shipping protection and warning system" and constitutes Paraguay's membership of the IMO's[14] International Convention for Safety of Life at Sea (SOLAS). This norm is due to come into effect July 6, 2006, one week after the presentation of this report.

It is recommended that the obligatory use of electronic seals on all containers transported by river be reconsidered. It is also recommended that each ship be monitored rather than each container, and that the so-called AIS[15] system approved by law be adopted so as not to duplicate shipping tracking systems.

Finally, it is recommended that these systems be managed by the national maritime authority (Prefectura Naval), which is already specifically mandated to control shipping. It should be pointed out that controlling shipping includes monitoring and analyzing any unnecessary stops made by a vessel that is suspected of loading or unloading illegal cargo in unauthorized sites and that maritime authorities need to have the resources and immediate response capacity to investigate and put an end to such activities. It is also recommended that an interface be set up between the customs authorities and the maritime authorities to correlate data on vessels and their respective containers so that this data is of use to both institutions.

4.C.4.2 Customs fees for transshipment services

The customs authorities charge a fee for each import bill of lading in the transshipment ports (Montevideo, Paranaguá and Buenos Aires). This customs fee is considered an excess cost inasmuch as no service is provided in return for payment of the fee. The fee itself is US$ 50, but a further US$ 10 should be added to this amount for customs brokerage expenses, as well as US$ 6 in VAT, which means that the cost of this fee per container is US$ 66. Given that 20,000 containers are transshipped each year, this fee generates US$ 1,320,000 in excess costs.

It is recommended that documentary procedures and customs fees be eliminated in transshipment ports.

4.C.4.3 Verification of cargo at the exporter's plant

The survey showed that, generally, the verification of cargo consolidated at exporter's plants is not efficiently carried out. This service has therefore been identified as an excess cost. There are two dangers in this situation: first, it poses a risk in fiscal terms, and second, it affects the credibility of the Paraguayan market due to its implications for the safety of international shipping.

For fiscal and safety reasons, steps must be taken to ensure that the on-site verification of consolidated cargo is effective.

[14] International Maritime Organization
[15] http://www.imo.org/Safety/mainframe.asp?topic_id=754

4.C.4.4 Certificates of origin

All exports in Paraguay are required to obtain a certificate of origin. This differs notably from current international practice in which certificates of origin are only required if the exported good is to benefit from preferential tariff schemes or if the client or customs service in the country of destination requires one[16]. In Paraguay, not only is it necessary to obtain a certificate of origin, but the certificate has to then be legalized by the MIC. The expenses involved in this procedure have therefore been included as extra costs.

It is recommended that at least the legalization of certificates of origin by the MIC be discontinued. It is also recommended that the general requirement regarding certificates of origin be eliminated, and that exporters obtain such certificates only as required by their clients or the customs authorities in the country to which they are shipping their exports.

Excess costs caused by the requirement to obtain certificates of origin: US$ 0.3 million

4.C.4.5 Consular visa requirements

Paraguay still has a consular visa system that has been conservatively estimated to generate excess costs of US$ 80 per shipment. This practice is contrary to the procedures established under the rules of origin of MERCOSUR and the WTO, as well as in all the other trade agreements signed in the region with other countries.

It is recommended that the obligation to obtain consular visas be eliminated. In the short term at least, and as a transition measure, a mechanism for paying consular fees together with customs fees should be set up in the customs office so as to eliminate procedural costs.

Excess costs identified as caused by consular visa requirements: US$ 6.8 million

4.C.4.6 Customs clearance procedures for containers

Transporters have to carry out nineteen administrative steps in customs in order to withdraw a container from a port in Paraguay (not to mention the procedures that must be carried out regarding the merchandise). This generates an estimated excess cost of US$ 30 per shipment. It also frequently causes delays in the delivery of empty containers and in the departure of full containers, which generates unnecessary inventory costs.

It is recommended that the procedures involved in retrieving containers from ports be eliminated by adopting the model used in Brazil in this respect. It is also recommended that the CNCSP draft a suitable norm to bring about this deregulation and propose it to Customs.

4.C.4.7 Customs brokerage fees

The survey showed that prices charged by customs brokers in Paraguay are higher than the regional average, as surveyed in Uruguay and Argentina. Customs brokers' fees in these two

[16] In the revised version of the Kyoto Convention, Annex K, Chapter 2, Recommended Practice, the WTO states: "Documentary evidence of origin should be required only when it is necessary for the application of preferential Customs duties, of economic or trade measures adopted unilaterally or under bilateral or multilateral agreements or of measures adopted for reasons of health or public order."

countries for regular clients are on average US$ 150 per import operation and US$ 120 per export operation. The Paraguayan prices are therefore considered excess costs.

Among the large importers and exporters of the nine products studied (those with trading volumes similar to those of other countries): customs brokerage fees in Paraguay averaged US$ 638 per transaction in three cases of imports (agrochemicals US$ 315, LCL US$ 160 and airfreight US$ 1,440); and US$ 304 in six cases of exports (soybeans US$ 132, frozen meat US$ 805, refrigerated meat US$ 300, wood US$ 213, sesame seeds US$ 213, and export LCL US$ 160).

The fact that customs brokerage fees are on average 300% higher for export operations and 150% higher for import operations in Paraguay, and in some cases even 600% higher, may be the result of the extraordinary amount of red tape in the Paraguayan customs system. Customs brokers face considerable overhead and miscellaneous "informal" expenses in the various steps of the customs clearance process to ensure that no additional costly delays are incurred.

Consultations with the National Customs Directorate, however, revealed that prior to the existence of the SOFIA system it took 40 different procedural steps in order to clear a shipment through customs, while the current number of procedures is now only twelve.

It is recommended that a thorough analysis be made of the red tape and miscellaneous expenses involved in customs clearance activities. This analysis should be performed jointly by importers and exporters, customs brokers and the customs service. The importance of customs clearance activities in foreign trade should not be underestimated as it is an essential service for all importers and exporters, and the considerable difference between prices for these services in Paraguay compared to other countries highlights an excess cost structure built into Paraguay's system that is hurting the country's competitiveness. It is also recommended that other issues in customs clearance activities be revised, such as the application of ad valorem tariffs, certain aspects of deregulation, the standardization of the criteria applied in invoices, alternatives for lowering brokerage costs, the elimination of documentation procedures, etc.

Excess costs caused by high customs brokerage fees: US$ 23.5 million

4.C.5 Water Transportation

4.C.5.1 Cargo reservation measures

At the moment, all import and export cargo transported by water must receive a cargo reservation certificate from the Merchant Marine Directorate prior to the merchandise being received or cleared at customs.

The validity of cargo reservation measures is questioned internationally and they are gradually being eliminated because they restrict freight supply and therefore raise freight charges and have a negative effect on freight users.

The cargo reservation measures currently in force should be modified through new legislation that eliminates restrictions on the free contracting of freight services. Care should be taken in implementing this change, however, as it could affect the Paraguayan shipping industry, which is a vital component of the country's foreign trade transport infrastructure. The sustainability and profitability of the sector should be evaluated prior to starting the elimination of the cargo reservation measures, and incentives to ensure the local fleet continues to grow should be implemented at the same time.

It is recommended that as a minimum first step, the requirement to obtain a cargo reservation certificate be eliminated in the case of ships sailing under the Paraguayan flag, given that in international practice, cargo reservation measures can only be applied to foreign vessels. It is also recommended that in the short term the practice of issuing cargo reservation certificates per barge be eliminated, and that the certificate be issued through the SOFIA system instead, as this would eliminate handling expenses.

Excess costs due to requirements of the Cargo Reservations Law: US$ 3.5 million

4.C.5.2 Cabotage

The dynamics of river transportation among the countries of the Waterway are extremely limited by the restriction that prevents the member countries from providing passenger or cargo transport services between ports in other countries. This restriction reduces overall holding supply and raises freight charges which affects users and the profitability of shipping companies.

Although all the countries of the Waterway have established exceptions to the cabotage restrictions that allow temporary permits to be issued to ships from other countries so that they can operate in their territory, the exception system is highly variable and unpredictable and therefore does not encourage shipping companies to invest in their fleet to cover these stretches.

The European Union's experience in this area shows that all the countries of the Waterway need to reach a multilateral agreement on cabotage that will allow vessels from all the parties to provide this kind of transportation in the territory of the other parties.

This would immediately increase holding supply on the Waterway and improve the profits of shipping companies.

4.C.5.3 Dredging and beaconage

According to the survey, Paraguay's ports have a maximum depth of ten feet in the Asuncion area part of the year (specifically in the Pilar zone). At certain times of the year, however, the operable depth is only eight feet. The available depth in the Alto Paraná River is eight feet as well.

A survey of the existing fleet, other surveys, and studies and consultations with shipping companies and users show that in order to maximize the use of holding capacity for bulk shipments, a constant minimum depth of twelve feet is needed in the Paraguay River and ten feet in the Alto Paraná River.

For containerized cargo the minimum depth required rises to fourteen feet in the Paraguay River, which is compatible with the twelve feet required by barges, given that container ships have wider berths. Although containerized cargo is not currently transported down the Alto Paraná River, it would be convenient to ensure twelve feet of clearance in the future for container traffic, which would also be sufficient for the push tugs that require ten feet to operate.

The dredging deficit is therefore estimated to be two feet in the case of bulk cargo transported by barge and four feet in the case of container transportation.

This is the most significant outstanding infrastructure deficit in Paraguay. Fifteen years ago there were three problems that were severely hampering Paraguay's foreign trade:

1. Insufficient infrastructure and management in Paraguayan ports
2. Insufficient infrastructure and management in the transshipment river ports
3. Insufficient vessels in the fleet
4. Insufficient dredging and beaconage

The first three problems have been adequately solved, but the last one remains pending.

The dredging and beaconage deficit is highly significant and represents an important loss of competitiveness, the excess costs of which affect producers and final consumers alike. The problem is not a technical one, inasmuch as the technical aspects have already been carefully studied, but a problem of resources management. It is also, according to this consultant, the main problem in Paraguay's infrastructure.

The ANNP is responsible for maintaining river depths and for bouyage and beaconage. Historically, however, this institution has never been able to allocate sufficient resources to solving this problem itself or through third parties.

The first step that should be taken is to restructure the ANNP's fees collection system to include a duty that is levied on cargo and destined exclusively for covering dredging and beaconage expenses.

The profitability of users and shipping companies would then need to be studied to determine how much each would pay and the benefits each sector would reap. To appraise the value of these kinds of charges, the amount of profits lost or not earned by each sector under the current situation should be compared with the situation that would arise if the river were adequately dredged and beaconed.

Unfortunately, users are generally skeptical about the handling of designated funds by government agencies and about the efficiency of government purchases.

It is therefore recommended that a transparent joint public-private mechanism be set up to control the funds and ensure that the contracting of dredging and beaconage services is carried out properly and efficiently. The main goal of these activities must be to ensure that the rivers are deep enough to guarantee the profitability of the fleet, that beaconage improves safety for shipping, and finally, that it therefore becomes possible to navigate the river 24 hours a day.

Excess costs caused by insufficient dredging: US$ 19.3 million

4.C.5.4 Water transport facilitation

A number of significant problems in transport facilitation in Paraguay have been detected, but the country has still not ratified the Convention on Facilitation of International Maritime Traffic, of April 9, 1965 (FAL 65), which came into force internationally on March 5, 1967.

FAL 65 is an international instrument aimed at facilitating maritime traffic by simplifying and minimizing the procedures, documents and formalities required of ships when they arrive at, stay in, or depart a port during international voyages.

Although this convention basically refers to maritime traffic, it is applicable to all forms of water transportation, including river transportation.

Under the Convention's provisions, the member governments commit to adopt adequate measures to facilitate and expedite international maritime traffic and to prevent unnecessary delays to ships, or the persons and goods on board.

FAL 65 also establishes the commitment to cooperate as much as possible in the unification of shipping procedures, documents and formalities so as to facilitate and improve international maritime traffic and to minimize the modifications that may be required to meet a country's internal requirements.

To achieve this simplification and standardization, FAL 65 sets forth "norms" and "recommended practices" for the procedures, documents and formalities required of ships, crews, luggage and cargo when they arrive at, stay in, or depart a port. There are 125 norms and 87 recommended practices.

It is recommended that the CNCSP analyze the convenience of ratifying FAL 65 and draw up a report and draft legislation on the subject to recommend, as it did with regard to the country's membership of SOLAS, that the Government of Paraguay ratify the Convention.

4.C.6 Collections

4.C.6.1 Delays in the issue of Bills of Lading (B/L)

Several exporters in Paraguay commented in the course of the study that it usually takes up to 30 days to collect on a letter of credit. This is longer than the average collection times reported in other countries in the region. Due to the complexity of the issue, no clear reason for these delays emerged, but several hypotheses were put forward and these are presented here.

Many exporters, customs brokers and shipping agents stated that it is impossible to get a B/L immediately or even within 24 hours of loading in Paraguay, and it often it takes up to a week for confirmation to be obtained about which vessel will transport the cargo to its final destination. This does not make sense according to the consultants who performed the study, however, because in Buenos Aires, Montevideo, Paraguaná and Santos, the ships that start transporting the goods are rarely the same ones that deliver the goods to their port of destination.

It was generally agreed that a small number of shipping companies who operate on the Waterway without adequate insurance are responsible for the difficulty obtaining a B/L in a timely manner. Others claim it is a certain number of unscrupulous exporters that are to blame.

There are above average delays in obtaining B/Ls and collecting payments in Paraguay compared with other countries in the region, which affects exporters financially. A more thorough study of this matter should be made through surveys and analysis to determine the true length of the delays and their causes, as well as the remedies that should be applied.

4.C.7 General Matters

The analysis performed on the transport chain has been reported sequentially from the preshipment stage to the final delivery of the merchandise at a foreign destination. Some factors, however, affect several different stretches of the transport chain, and are therefore presented in this section under General Matters.

4.C.7.1 Shipping, port and customs service fee payments

Freight charges, surcharges, port fees and customs services are mostly paid for by certified check or in cash. There are no electronic payment mechanisms. Expenses are high due to the costs involved in issuing certified checks, and the flaws and lack of transparency in money transactions.

Alternatives to the current system of paying freight charges, surcharges and port fees by certified check or in cash need to be explored with electronic payment mechanisms being a clear possibility. The most widely used system worldwide is now data cash. This system has just been implemented in the port terminal of Buenos Aires for payments made by users and customs brokers. It still adds some costs, but these are less than the expenses and personnel costs incurred issuing certified checks under the previous system. It also reduces the flaws and improves transparency in money transactions.

As far as Customs charges are concerned, the SOFIA system already offers the possibility of making electronic payments. It would therefore be convenient to determine first what percentage of payments are now being made electronically, both in terms of operational volume and the number of transactions carried out this way, and then for Customs and the CNCSP to study ways in which to increase the proportion of electronic payments.

4.C.7.2 Safety

The safety situation along the international transport chain from the point of production to the transshipment port is analyzed in this section.

Production plant and/or point of consolidation

The interviews and workshops held revealed widespread ignorance of the international safety norms applicable to the logistics and transport sector, such as CSI, C-TPAT, BASC, the WCO Framework, etc. This situation affects the competitiveness of the Paraguayan export sector and needs to be remedied. In the survey, only one company had BASC certification.

Land transportation

C-TPAT norms are also not being adopted. Implementing international safety norms would not be a difficult task.

Port

- *The port operations model*. Nearly all containerized cargo in Paraguay is handled in either private terminals or one terminal owned by the ANNP in Asuncion. The integral operating system in the private terminals is compatible with the future implementation of CSI and C-TPAT measures. In the ANNP terminal, however, the presence of multiple operators and agencies under the current framework means that CSI and C-TPAT measures could not be implemented, and major organizational changes and investments in infrastructure would need to be carried out.

- *The handling of physical safety and control of access*. Entry and exit is adequately controlled in Paraguay's private ports. The administrative, customer service, and supplier's areas need to be separated from the operations areas in some cases, however. There are no photography, OCR (Optical Character Recognition) or video systems at any of the gates to the country's ports.

- *Non-intrusive detection equipment* There is neither non-intrusive detection equipment nor radiation detectors at the moment.

- *Cut offs*. The transportation lines, either individually or according to various criteria, set cut offs in coordination with the port operators. Opinions vary on this subject, and so far no cut off measures have been adopted at a port or at the national level.

- *The scheduling of cargo receipt and delivery*. There is a lack of coordination in the receipt and delivery of cargo in Paraguay. Cargo receipt and delivery operations are not scheduled, instead they are carried out in a random fashion, which results in delays and excess costs for users and the port terminal itself. Thanks to the low volume of cargo handled at the moment, however, the waiting lines and times at the terminals are not significant.

Customs control procedures

The customs control procedures in Paraguay need to be thoroughly revised to create a framework that is compatible with modern port practices, including the use of specialized integrated terminals and the implementation of trade facilitation guidelines.

Shipping agents and companies

The C-TPAT has not been adopted by the shipping agencies based in Paraguay, despite the fact that implementing these norms would not be difficult.

Little is known in Paraguay about new international safety initiatives and norms nor of the potential benefits they represent. It is recommended that extensive awareness-raising activities be organized to remedy this situation.

4.C.7.3 Transport and logistics indicators

Transport and logistics indicators are barely monitored by the market and there is little public analysis of transport costs. In some case this depresses prices considerably to that point that freight prices only cover the fleet's operating expenses without considering amortization costs, and this leads to the deterioration of the automobile park. The lack of indicators also places some cargo carriers at the mercy of oligarchic arrangements on some transport routes.

A logistics and transport indicator model should be developed, and personnel from the Chamber of Commerce and Industry should be trained to operate and publish the indicators, effectively improving transparency by providing current reference values for activities in the sector.

4.C.7.4 The under utilization of equipment and specialized services

There is a lack of development, knowledge and human resources in the Paraguayan logistics, distribution and transport sector vis-à-vis the situation in neighboring countries. This represents a loss of opportunities and competitiveness.

A number of activities could improve competitiveness in the logistics and transport chain:

Logistics training. Efforts should be taken to raise awareness among exporters and producers of the techniques and alternatives for increasing profits and efficiency through the contracting of specialized logistics services and to train them in these techniques.

User associations. It is recommended that export firms be encouraged to form alliances to contract and/or consolidate their shipments. Such "user associations" have proven to be effective in a number of countries (the United States and Argentina, among others) by achieving economies of scale in demand for transport and thus in obtaining better prices and conditions and improving the sustainability of transport flows, storage availability, etc. They have shown that although exporters compete in the same market, joint action of this kind can collectively increase their profitability. For the service providers, although these alliances tend to reduce their profit margins, they improve the economies of scale and the predictability of their operations and this enables them to plan investments in equipment, which improves the quality of the service they offer.

4.C.7.5 Under utilization of value-added services and logistics management tools

There is a systematic lack of personnel with mid-level or technical training in transport and logistics among both service providers and users.

Several activities could be carried out to remedy this situation in Paraguay. These include formal training and, given the lack of economies of scale in the local market in some cases, distance learning schemes that use videoconferencing and/or Internet training in the following areas/subjects:

Training for producers and exporters Efforts should be taken to raise awareness among exporters and producers of the techniques and alternatives for increasing profits and efficiency through the contracting of specialized logistics services, This training should focus on each chain and product and provide practical training in how to weigh the potential benefits of using certain services and innovative practices.

Training for service providers This should aim to help service providers introduce modern technologies into their logistics operations that optimize the services they provide, such as warehouse management, distribution, packaging, etc.

Training in safety in the logistics chain This training should introduce, educate and assist people with all aspects of safety in the logistics chain: traceability, international safety standards, international sanitation standards, etc.

Assistance for universities and training institutes Universities and training institutes should receive assistance with the development or perfection of logistics training and updating activities and obtain international recognition for the certification of their professional courses.